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and
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DYNAMIC STABILITY: THE SOVIET ECONOMY TODAY

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ВИКТОР И ЭЛЛЕН ПЕРЛО

ДИНАМИЧНАЯ СТАБИЛЬНОСТЬ:
СОВЕТСКАЯ ЭКОНОМИКА СЕГОДНЯ

На английском языке

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INTRODUCTION

This has been a difficult book to stop writing. Almost every day there is news of some important development in the Soviet economy. There have been frequent compulsions to add to this or that chapter, not so much to update statistics as to take account of significant qualitative advances.

But of course one has to stop somewhere. The reader is cautioned, therefore, that no book on this subject could ever possibly be fully up to date as of the time of publication. I think it truly presents the picture as of the late 1970s and the main directions of development that will prevail for the next decade or so.

But wholly new features, new dimensions of progress, may appear that are not yet visible as this book is being written. This constant change, combined with a powerful and steady overall forward movement, dictated the title of the book: *Dynamic Stability: The Soviet Economy Today*. The original suggestion was *The Stable Economy* to contrast with the title of my 1974 volume about the U. S. economy, *The Unstable Economy*. But to call the Soviet economy stable isn't enough: it could be stable and stagnant, and it surely isn't that.

The dynamism of the Soviet society is expressed not only in standard economic terms. In the most fundamental way, it is expressed in the active, creative participation of a very large proportion of the population in the economic, social and political life of the country; in the involvement of millions of enthusiastic participants in opening new frontiers, twentieth century pioneering, with the aid of modern science and technology; and in the prominent role of youth in all phases of development, a phenomenon which the Soviet Union shares with other socialist countries, but on a scale unequalled anywhere at any time.

The young people are learning and building. They already have a high level of responsibility, and they are being prepared to take over the management of affairs—not in

opposition to the older generation, but with fuller, more rounded qualifications, with the enthusiasm of a whole generation brought up in the ideology of Communism, seeing its accomplishments and believing in it.

I saw some of their projects and met some of these young people – in the pioneer communities of Western Siberia; the creative scientists of a research institute in Riga; the politically involved young editor of a plant newspaper in Novovoronezh; the leader of a plant's Komsomol group in Surgut. I saw the glorification of Heroes of Labor everywhere, and met some of them. I met, by chance, an "average" woman factory worker in Novosibirsk who turned out to be, also, an elected official, a leader in trade union affairs, and a national-level delegate to the 25th Congress of the Communist Party of the Soviet Union.

I saw and experienced enough to gain confidence in the reality of these figures:

– There are 60 million shock workers of Communist labor, including farmers, and half of them are youth;

– There are 12 million young people engaged in scientific and technical creativity, in research establishments, as inventors and rationalizers in industry, as explorers and discoverers of resources;

– Of the members of the Supreme Soviet, 20 percent are under 30 years of age (there are less than 1 percent in the U. S. Congress);

– The Komsomol, to which a large proportion of young people belong, has patronage over 140 important projects of socialist construction. That means it assures disciplined work, high productivity and, where necessary, overcomes hardships;

– There are 4 million members of Komsomol Searchlight, an organization which exposes shortcomings and finds ways of overcoming them;

– There are 10 million members of environmental organizations; and

– There are millions and millions engaged in organized sport activities.

The door to advanced education is open to all, without financial barriers or admission limits. That is, while there is a limit to the number who can be admitted to any given institution, there are educational opportunities, evening or correspondence courses, available to all who are not enrolled full-time in higher educational schools.

There is complete equality and free mingling of the many races and nationalities of the Soviet Union. On this and earlier visits, I have been to 7 of the 15 Union republics and 2 smaller national geographic areas. I have met people of all these and many other nationalities. I am fully convinced, from observation as well as from study of the relevant data, that this equality is real and that *all* assertions to the contrary in the West are either deliberate lies or the allegations of dupes deceived by propaganda hostile to the Soviet Union. This equality, as I have seen in the non-Russian republics, is combined with the bold and free expression of national character, national culture, national pride and national language, used with legal and practical interchangeability.

Certainly I saw much that was wrong. I encountered bureaucracy, inefficiency, poor management, inexplicable failures to provide simple facilities at some public places. But that is what is being overcome, outgrown, done away with in a society that is dominated, overwhelmingly dominated, by the positive.

My preparation for writing this book really began some thirty years ago. During this period I have been reading everything I could get my hands on about the Soviet economy – I learned to read Russian adequately – and have been writing quite a bit about it also.

I first visited the country in 1960 – a three-month visit with my wife and two sons. On that occasion I traveled extensively, visited many enterprises and schools, and had a number of meetings, of which the most notable was with Anastas Mikoyan of the Central Committee.

In 1965, on a shorter trip, my wife and I visited different areas and had some very important meetings. One was with A. Galazy, director of the Limnological Institute on Lake Baikal, a pioneer in the successful campaign to protect Baikal from pollution. Another memorable meeting was with E. Liberman, the Kharkov economics professor. His articles in *Pravda* on modernizing the system of economic management excited the broadest discussions of economic policy: tens of thousands of Soviet people, most of them engineers, economists, people with some know-how, participated in the public search for the best ways to

modernize the economic management of their vast country. The proposals of Trapeznikov, Liberman, and other economists seeking the best way to advance, met with strong opposition. And with strong support. But in 1965, the very year of my visit, the Government adopted, in principle, the essence of their proposals.

This economic reform had an important effect in stimulating economic progress, although less than its advocates had hoped for. I'll discuss that further in another chapter.

Since that 1965 visit, I have been in Moscow several times, but only in transit for a few days, so they didn't count and my 1977 visit was the next—but I hope not my last.

This time my wife and I traveled 13,000 kilometers around the Soviet Union in seven very intensive weeks of conferences, plant and farm visits, and experiences of everyday life in the USSR. Since the trip was for the specific purpose of collecting material for this book, I decided in advance pretty much where I wanted to go, what production facilities and government agencies I wanted to visit, and the questions I wanted answered. And I informed Progress Publishers of these desires.

Their cooperation was excellent. About 75 percent of my requests were met. The 25 percent missed was not for lack of trying, but mainly for lack of time. To cover all I wanted to would have required about three months, and other circumstances compelled me to limit the trip to seven weeks. So there are some gaps, some areas about which I could not get first-hand information, and some problems I became aware of during the trip which call for fresh study.

In most places we visited, the people were fully cooperative. But not all. We visited some institutes and some factories where the officials in charge "stonewalled". Naturally I was interested in exploring difficulties, problems, shortcomings, as well as accomplishments. And most people freely discussed all facets of their enterprises.

In some cases, fruitful meetings had to be cut short because of the tight schedule; in other cases extraneous events prevented fulfillment of my hopes. Thus, I failed to meet the most relevant people at the Siberian Branch of the Academy of Sciences of the USSR because one academician was delayed a day in Moscow and another was ill on the day that my schedule permitted me the visit. The day was

rewarding, and the people I met cooperative, but the specific area of my interest was not covered.

But the overall "batting average" was very high and, in general, people discussed questions fully and openly.

And the Soviet Union *is* an "open" country. Of course, I didn't ask to visit armament factories or military bases. But, for example, there were literally no limitations on taking photographs—save the rule against photographs from airplanes and a refusal in just one of the many factories we visited. We were invited to about a dozen homes, and these informal visits and the delicious meals we were served are among our most pleasurable experiences. None of these visits was officially arranged. Of course, in some cases the visits were to the homes of old friends whom we had visited before, but in most cases they were to the apartments of people we met during the trip. I dare say people were as hospitable previously, but the housing situation and food supplies have so improved that they no longer feel embarrassed to have foreign guests. In fact, they are proud of their homes.

Our 51-days in the Soviet Union—15 in Moscow and 36 on the road—were strenuous for all four of us: Elena Olshevskaya, Valery Kirov, my wife Ellen, and myself.

Elena was our interpreter. By profession she is an editor at Progress' English department. She had just returned from a stint teaching at the University of Sussex, in England. Knowing a language well, which she does, or even translating it, doesn't make it easy to act as a live interpreter. That requires a specialized skill. And it was doubly difficult for Elena because she was not familiar with the technical terms of economics, engineering and industrial technology which figured so much in our conversations. But she worked hard at it and did an excellent job.

Elena was our very good friend off the confines of the job. She was my companion on mountain hikes and on the tennis court, and Ellen's on trips to art galleries, artists' studios and on shopping expeditions, as well as on group excursions for fun and cultural enlightenment. Thus much of our limited leisure time was also more pleasurable because she accompanied us.

Valery is a staff editor at Progress Publishers. He arranged all technical, social, cultural and official aspects of our trip and acted as our sponsor. He is a man of wide

experience, in the Soviet Union and abroad; he has the expertise necessary for accompanying official foreign visitors who have to meet key people and be shown through various establishments. Valery supervised the preparation of our program in the various cities and he took care of unexpected situations. And he arranged the modest V.I.P. treatment at airports and in hotels – in most cases similar to that profferred to all foreign travelers in the USSR – which eased the heavy traveling schedule.

And I should mention another important sponsor – Valentin Bomkin. Bomkin was home-base backstop for our travels. And during our final period in the USSR, Valentin accompanied us to some meetings and he went with Ellen and me on our notable train trip to Voronezh to visit the nuclear power plant near there. Ellen is a very reasonable, easy person to get along with. But even she has her peculiarities, and I present plenty of problems. I am very demanding of people who work with me: I want to do everything, go everywhere. I have personal eccentricities – and I am sometimes impatient, especially with ceremonial affairs. Even with the easiest of foreign visitors, it is difficult to have to virtually live with them, traveling and working, for five weeks. But on the whole, things went well, and my hat is off to all three of these Soviet colleagues.

I outlined the book, planned the collection of materials, drafted most of the text. But the participation of my wife Ellen went far beyond that which can be covered in an author's acknowledgement. She served as secretary and photographer on the trip, taking the essential notes of most interviews and taking all of the photographs – which have served as slide shows accompanying several lectures as well as illustrations for this volume. During the writing, she has acted as secretary, critic, rewriter and editor. She has also written most of one chapter and sections of others. That's why the authorship of this book is: by Victor and Ellen Perlo.

The book is based in part on visual impressions and interviews, but in at least equal part on prolonged study, distillation of economic policy works, economic theory volumes, and concrete economic data. One may say, therefore, that it is part economic journalism, part fundamental economic analysis. Some people may object to such a combination. But I think it is desirable, for this subject. At any rate, that's what this book is.

Chapter I

OVERALL APPRAISAL OF THE SOVIET ECONOMY

Most writings on the Soviet economy that appear in the United States – in the press, Congressional reports, books, and economic journals – share certain characteristics:

They are written as bostile propaganda. Their aim is to incite hostility to the socialist system, and to the Soviet Union in particular. They are replete with distortions, with biased, one-sided presentations. There may be specific accurate facts in these works, but the totality of their content is usually completely misleading.

They are written from the viewpoint of the professed standards of U.S. capitalism. They assume for tbe Soviet Union goals which that economy does not aim to meet, and which in most respects the U.S. economy doesn't meet either. They do not state either the actual objectives of the Soviet economy or the extent to which they have been met.

I am from the opposite camp: a supporter of socialism, a foe of capitalism. I have a tremendous admiration for the Soviet people and for what they have accomplished in all fields of life. I want to examine their economy according to *their* standards, their way of life – tbe standards and goals of a socialist society. True, many of these goals overlap objectives held by most Americans, but they are cast in a different framework and bave a different set of priorities.

I want to accomplish this as honestly and accurately as I can. I want to record not only accomplishments, but also to probe into the causes of shortcomings.

What are the tasks of the Soviet economy, and to wbat extent have they been realized in the past 60 years? One can define two long-run strategic goals:

First, to create the material basis for a socialist society, and then for a communist society;

Second, to prove the superiority of the socialist system over the capitalist system.

On the first point, it is important to note some definitions, especially for many Western readers who have been exposed to much material which confuses the two stages of development, socialism and communism.

A socialist society is one in which productive property – the means of production – is socially owned, either by the whole people, acting through their government, or through cooperatives. Further, in a socialist society, distribution is mainly according to the rule: from each according to his ability, to each according to his work – that is, according to what he produces. This form of society already exists, and at a highly developed, mature stage, in the USSR.

A communist society is a decidedly more advanced stage, which can now be described only in the most general terms, having the following characteristics:

The productive forces are so advanced that all the reasonably defined needs of all of the people are supplied;

The advance of science and technology, and the consequent conditions of work, on the one hand, and of the training and social development of individuals, on the other, have reached a stage where work itself becomes a prime necessity and source of creative satisfaction, rather than a burden;

Where distribution can be according to the slogan: from each according to his ability, to each according to his needs.

Many Western critics attack the Soviet Union for not distributing goods according to this standard, and at the same time they misinterpret the criterion as representing *equal* distribution. That is not accurate: people's needs vary greatly qualitatively and quantitatively.

Actually, year by year the Soviet economy takes on more of the attributes of a communist society, and Soviet leaders talk of building communism as an ongoing process. But now and for a long time to come, the economy is and will be predominantly and in its totality at the socialist stage. So we must examine more concretely the goals of socialism and appraise their extent of accomplishment in the USSR.

Here are those concrete tasks:

1. To eliminate the exploitation of man by man; to eliminate all exploiting social classes; to develop a socialist economic structure.

This was accomplished by the mid-thirties, when the last of the exploiting capitalist farmers – "kulaks" – were expropriated. Long before that, industry had been nationalized and agriculture was organized mainly in cooperative "collective" farms, partly in state farms. In the past decade, the role of the state farms has grown, and the distinction between the two forms has narrowed.

2. To demonstrate the possibility and advantages of a centrally planned economy, achieving proportional development of its various sectors and balance between town and country, agriculture and industry, investment and consumption, production and finance, labor and people.

This has been accomplished with dramatic success. The Soviet experience with five-year plans has become a model for all socialist countries, for many developing countries and, even, in a distorted fashion, in some developed capitalist countries. Structural contradictions which thwart effective planning, however, have not yet been overcome; there remain some serious shortcomings in Soviet economic management and planning, which we'll go into.

3. To establish what the Soviet Constitution calls the "basic economic law" of socialism: "the direct object of socialist production is the ever fuller satisfaction of the constantly growing material and cultural requirements of all people, through continued development and improvement of social production based on the highest technology". (Nikitin, *Fundamentals of Political Economy,* Moscow, 1966, p. 242.)

This is a profound statement and demonstrates most clearly the difference in objectives, in goals, between socialism and capitalism.

Under capitalism, there is no accepted *socially organized* aim. Not so long ago a commission of prominent personalities was set up to define the goals of U.S. capitalism. But in vain. They could not agree on a formulation of meaningful goals acceptable to the public. In capitalist economic theory, the society works by each individual seeking to maximize his individual economic wealth and income; a narrow, rather petty concept, in the light of present-day standards of human rights, social welfare etc. In practice it boils down to a society dominated by the owners of giant corporations who are striving for the highest possible profit at the expense of the labor of

the masses of the population, and especially of oppressed people in developing countries and minorities in the home countries.

How has the "basic economic law of socialism" worked out in practice? We'll examine it in detail later on, but for the moment let me state that living standards in socialist countries, by any measure, have risen more rapidly for the whole people than in any previous social system; by the crudest, statistical, non-qualitative type of measurement, at least twice as fast as in the United States during a period when U.S. living standards were increasing, from the end of World War II through the 1960s.

4. To overcome the extreme poverty of Czarist Russia, the desperate situation of the great majority, punctuated by periods of mass starvation in famine years, compounded by the devastation of war, which hit Russia and the USSR more than any other country.

This has been decisively accomplished. The USSR is the first country in history to eliminate glaring poverty, sharp contrast between the luxuries of the ruling class and the poverty of the masses.

I'll go into this in some detail, and examine some remaining shortcomings in this respect.

5. To eliminate such social ills of capitalist economy as unemployment, racial and national discrimination, inflation; and to provide a whole new set of social services, previously unavailable to working people.

This has been accomplished, in all particulars, decisively. Indeed, in a comparatively short historical period, the Soviet Union's achievements in this area have been so outstanding as to give rise to mass organization and struggle for similar gains in capitalist countries. The realization, in varying degrees, in capitalist countries of social insurance and public health services, and the demands – as yet unobtained – for the elimination of unemployment and racial discrimination, are definitely attributable to the Soviet example.

6. To demonstrate the possibility of mobilizing a work force of millions, in both urban and rural areas, which is motivated not only by individual need and gain but also to create for the good of all; to involve workers increasingly in the management of productive enterprises, gradually shifting the organizational emphasis from a manager-employee relationship to one of collectives in which all participate in

the process of planning, managing, and controlling while producing.

The first of these aims was accomplished as far back as the ambitious projects of the early five-year plans; in the incredibly heroic labor efforts of World War II, and on an ever-increasing scale in the postwar period. Progress toward the second is demonstrated in the participation of millions of workers in production conferences, in Communist Brigades of Labor, in after-job education for higher skills and scientific know-how, and in other forms of high-level, purposive sharing in responsibility and creative endeavor, in youth mobilizations for special construction projects, such as BAM and, in the 50s, the development of the Virgin Lands.

I'll get into this in some detail in describing the people involved in the current development of oil in Western Siberia.

7. To build, rapidly, the basic industrial foundation necessary both to provide high and rising living standards and to defend the country from imperialist assault.

World War II was the decisive test of early success in this dual requirement. And the USSR came through with flying colors. Subsequently the Soviet Union made such great progress that the strongest imperialist power, the USA – some of whose generals and recognized publications made no secret of plans to invade the USSR in the 1950s – was forced to retreat from its position and to accept the concept of peaceful coexistence.

This tremendous accomplishment has *already* saved the world from a major war involving two or more great powers for the longest period in the history of capitalism. And if carried further, with suitable developments in the world peace movement, it may begin to win practical disarmament and a permanent receding of the major war danger.

And this must be considered an *economic* triumph of socialism. The claim of some Sovietologists that the USSR can only be successful in military production is absurd. Without a sound, modern, industrial, agricultural and scientific-technical foundation, a modern top rank military machine cannot be built. And Soviet accomplishments in outer space are proof of scientific-technological advances.

However, the need to devote so much of its resources to

defense and the struggle for peace has necessarily slowed up the rise in living standards in the USSR. We'll examine this in more detail later, also.

8. To build the economic reserves necessary to provide economic assistance and military support to weaker countries building socialism and threatened by internal class enemies and by imperialism. And to give similar assistance to developing countries seeking to win political and economic independence from imperialism and apartheid.

This has been a tremendous accomplishment, which has worked from the Far East to Eastern Europe and to Cuba. It has slowed up gains in living standards in the USSR, but by now this is not a one-way street. The mutual cooperation among socialist countries is aiding living standards in the Soviet Union also.

9. To create, following this, new and effective interstate economic and scientific-technical cooperation for mutual assistance and for eliminating differences in economic level. The rapid quantitative and especially recent qualitative improvement in CMEA – the Council for Mutual Economic Assistance – is one of the most dramatic accomplishments of socialism and is now contributing mightily to the power and well-being of each member country, including the USSR.

It stands in striking contrast to the contradiction among the imperialist states and between the developed and developing capitalist countries. The equality of CMEA members is in striking contrast to the inequality – to the claims of U.S. "world leadership" – in the capitalist world.

Now, to the second strategic task, of proving the superiority of the socialist system over the capitalist system.

In the economic field, this means, most essentially, to overtake and surpass the most advanced capitalist countries in output per capita. I'll go into this in some detail, but here is a brief summary:

In about 35 effective years – not taken up with wars or reconstruction – the USSR has raised its industrial production from 12 percent to 80 percent of the U.S. level; its agricultural production to 85 percent; its national income to 67 percent; and its per capita national income to about 57 percent of the U.S. level.

Some other socialist countries are already ahead of the Soviet Union in labor productivity, and the CMEA countries

as a group are about on a par with the capitalist countries of Western Europe.

The USSR has reached first place in the world in the production of steel, coal, oil, cement, cotton textiles, fertilizers and many other products. It equals the United States in the volume of capital investment, the key to future growth.

Projection of trends would put the USSR in first place in overall output per capita by the end of this century. But that will require overcoming certain weaknesses in the Soviet economy. These weaknesses, in combination, are currently slowing economic progress. I'll discuss them in a special chapter.

But, at the same time, one must mention certain special strengths of the Soviet economy:

The ability to concentrate whatever is needed in terms of resources, labor, and finances in the most crucial, decisive economic sectors;

The prevision of the first leaders of the Soviet state and their non-imperialist approach, which led to the early building of a great geological and resource development sector, and which has made the USSR the only industrialized major power with an energy surplus;

The support and confidence of the population in its Government and in the Communist Party, based on their proven ability to deliver the goods, on consultation with and involvement of the people in all affairs and in avoidance of demagogic extravagant promises.

And, in considering the overall world situation, the deepening general crisis of capitalism is weakening the ability of reactionaries in the United States and other countries to conduct economic warfare against the USSR.

While this manuscript has been awaiting publication, history has put a double exclamation point, so to speak, after this summary statement of the strength of the Soviet economy. I refer especially to the Soviet success in developing its energy resources, in the light of the new stage of the energy crisis of the capitalist world that was ushered in by the Iranian revolution.

Capitalist leadership seems to be unable to devise a program for resolving this crisis – even a bad, profiteering program – that has some promise of working. It has become glaringly evident that an integrated, planned method of

dealing with the problem of energy is needed. But capitalism's leaders in the United States – the largest consumer of energy by far – are unable to find such a method.

Their main reaction has been to *de*regulate oil, to "free" private enterprise from "restrictions". This method is spectacularly increasing oil corporation profits, but it only makes more severe the actual and potential shortages of energy. In addition, there is a program, still facing Congressional wrangling, for awarding unprecedently vast subsidies to corporations to try to develop new energy sources.

But these steps again leave everything to the initiative and decision of the owners of private companies. The only certain results will be increased taxes; still higher prices for energy products; and more profits for energy corporations.

The actual situation is dominated by a complex of conflicts. There are conflicts between energy corporations and the consumers who, at best, are only slightly successful in slowing the rate of increase in costs. There are conflicts among producers of rival energy sources – oil, coal, nuclear, and even solar – with experts and others endorsing one form and condemning another; with substantial mass movements involved in disputes over technology, protection of the environment and safety – and the fortunes of large corporations hang on the outcome. There are conflicts between producing and consuming countries, most notably between the OPEC countries and the United States, with U.S. government officials and prominent individuals increasingly threatening military force to seize OPEC oil.

The scale of world economy has become so large and the relative share of international trade so important that problems have to be approached and solved globally and cooperatively, or they will not be solved. There is not an absolute shortage of energy, but there is an absolute need to plan – for the shift from sources being used up to new ones; for the accelerating increase in the energy needs of developing countries; for coordinating consumption with production. And all this should be done on a basis of peaceful cooperation, considering the interests of all peoples.

The attempt to go at it in the old way, with domestic "freedom" for profit-motivated corporations and with international military and economic pressure on developing countries to hand over their raw materials, no longer works.

It leads to increasing hardships for the masses, a weakening economy, and war dangers.

The Soviet experience is extremely valuable for the world, which is facing the need for a rational solution to the energy problem. Thus, the following three chapters of this book deal with important aspects of the Soviet experience in this area, as we saw them in the Soviet Union, along with some comparative domestic observations that point out the tremendous creative potential of the American people. This potential will be fully realized only when the United States solves the problems of an increasingly constricting social and political environment and, I would say, when we have political leaders who match the eagerness of the Soviet side and the readiness of the U.S. public and business community, for cooperation on energy questions.

*

In writing this book, I have made comparisons between conditions in the Soviet Union and the United States. But basically, the Soviet economy should be judged on its own merits – on what it has accomplished, in what direction it is going. While comparisons provide American readers with a familiar yardstick, there are serious limitations because of the qualitative differences between the two social systems and because of the different histories of the two countries.

There is the typical method of comparison used by the CIA and other U.S. Government agencies, corporate advertisers and hostile journalists. They may say, for example, that an American worker has to work only 15 minutes to buy a pound of meat, while a Soviet worker has to work 60 minutes. Therefore, the comparison implies, the Soviet worker is in a bad way indeed. This kind of comparison is very dishonest, especially because of its selectivity. For example, they never publish this kind of comparison: an American worker has to work at least 7 days to pay his monthly rent and household utilities; the Soviet worker has to work only 1 day.

It is true, as I show, that the average material standard of living in the Soviet Union is less than the average material standard of living in the United States. But Soviet people have certain advantages that most U.S. working

people lack – economic security, freedom from inflation and monopoly profiteering, from racist discrimination, from extreme class differences in economic status. One cannot balance these factors with a quantitative measure.

Even when valid, comparisons made by supporters of capitalism are static, relating to a particular time. *But much more relevant in evaluating social systems is the comparison of directions and rates of development.*

The pundits of the CIA ignore the fact, of which they are well aware, that on the eve of the Russian revolution, Czarist Russia was a backward country, even by the standards of that time. The great majority of its population lived no better than the peoples of Latin America who, in turn, had – and still have – one-tenth the per capita income of North Americans.

The United States recently celebrated its 200th anniversary, the USSR its 60th. During its short socialist life, the Soviet Union has had two major wars fought on its territory, suffering devastating losses of life and resources. The United States, in that time, was the sole economic gainer from two world wars, which did not affect its territory and caused relatively few U.S. casualties. During most of the Soviet's 60 years, the capitalist powers, still economically stronger than the Soviet Union, conducted intense economic warfare against the USSR, striving to hamper and sabotage its development in every way possible.

Despite these handicaps, the Soviet Union, in the 60-odd years since 1917, has made more economic progress than any country in history in such a span of time. In 1913, just before World War I, Czarist Russia's industrial production was no more than that of the United States 45 years earlier. Today, Soviet industrial output is less than 10 years behind that of the United States.

The improvement in mass living standards, compared with gains in the United States, has been even more dramatic. The achievement of equality among peoples within the Soviet Union and the equalization of conditions among socialist countries have no comparison at all in the capitalist world. And the elimination of exploitation of labor for private profit remains the unique, and decisive, contribution of socialism, the realization of the age-old dream of prophets, reformers and revolutionaries.

Of course there are some areas in which the USSR will

never catch up to – or descend to – the level of the United States, because it doesn't want to spend tens of billions on advertising, or to encourage high-stake gambling, pornography, drugs, and decadent life styles. It will never match, or permit, individuals who accumulate tens and hundreds of millions of unearned wealth. For these "freedoms" of a select few under capitalism, the USSR substitutes different freedoms for all: freedom to choose a career, freedom from fear of unemployment, freedom to obtain a higher education, freedom to obtain all necessary health care without cost, freedom to participate in collective management of economic, social and political affairs.

The standards of the Rockefellers cannot be those of the builders of the BAM railroad. That is what you should remember when you read this book and regard the comparisons in that light.

Chapter II

SIBERIAN OIL

Our 13,000 kilometer trip started with a visit to the oil area of the Middle Ob region of Western Siberia–the center of one of the world's largest development projects.

Describing the capital construction for the oil and gas of Western Siberia, Boris Shcherbina, the USSR Minister of Construction of Enterprises for Oil and Gas Industry, said:

"All in all, this is a venture that has no parallel anywhere. The volume of capital construction will be greater than the combined volume of such major projects as the Baikal-Amur Railway, the Volga and Kama automobile plants, and the Atommash nuclear engineering plant now in construction." (*New Times*, No. 7, 1978.)

So I looked forward with much anticipation to our arrival in Tyumen, the administrative capital of the oil area–and that five-day period in Western Siberia was the most stimulating and dramatic part of our entire trip.

Our itinerary was planned in Moscow, of course, and it was logical to apportion several days to Tyumen, as the oil capital. We got going right after breakfast the morning after our midnight arrival. Despite its being Saturday, a meeting was scheduled with two of the most important officials–Yuri Borisovich Fein, Deputy Chief of the Main Tyumen Oil and Gas Administration (Glavtyumenneftegaz) and Naryan Khasanovich Kulakhmetov, Deputy Director of the West Siberian Experimental Geological Exploratory Institute.

Fein is a Lenin Prize Laureate and Kulakhmetov is a candidate of geological and mineralogical science. Both were hospitable and very knowledgeable, describing the background of the area, outlining the potential and operation of the oil industry.

I learned that the huge reserves of oil in the West Siberian lowlands, an area of 2,7 million square kilometers which reaches from the Yenesei to the Urals, from the Arctic Ocean to the Altai, were forecast in 1934 by Academician A.K. Gubkin. But it was decades before the country had the know-how, capacity, and need to devote the huge expenditure required to extract this resource, located in some of the least accessible and most inhospitable lands outside of Antarctica and the Greenland ice cap. Up to 70 percent of the land in the oil-bearing regions is swamp, from 2 to 12 meters deep. There were no railroads, or even cart or car roads, north of Tyumen and even villages were few–mainly small fishing clusters along the banks of the rivers.

In his very informative book, *Mineral Wealth of Western Siberia and Its Uses*, S. M. Nikolaev (with whom I later spent a very interesting afternoon in the Geological Museum he directs in Novosibirsk) writes:

"In 1945 the Academy of Sciences of the USSR made a special decision and projected a course of research into its oil and gas deposits....

"Geologists invested much effort and labor in order to organize search-exploration work and to set the search going. The partisans of Siberian oil had no few authoritative opponents who asserted that the search for oil and gas in Western Siberia was useless. Years went by. Many wells were drilled, but there was practically no oil. Many became disappointed at the lack of success in finding it: the huge area of unchanging, boundless, impenetrable swamps, marsh and bottomless quicksands unfreezing even in the bitter Siberian frost, taiga, lack of roads, permafrost descending to a depth of 400 meters, pests so dense that it is impossible to breathe without mosquito repellent. And it was necessary to bring heavy equipment, to drill expensive wells to depths of more than 3,000 meters. Especially heavy was work in the most difficult northern areas despite insufficiencies of technical supplies for the exploration parties....

"The first sign of oil was in the Kolpachevo wells in 1954 (2 or 3 liters per day). But, finally, the labor of geologists achieved success. In Tyumen oblast on the river Konde in 1960 there was the first gusher of oil in commercial quantities at the Shimsk deposit, but then there were many others. In recent years on the territory of the lowlands more than 100 deposits of oil have been opened.

The scientific prevision of Soviet specialists was brilliantly confirmed." (S. M. Nikolaev, *Mineralniye Bogatstva Zapadnoi Sibiri i ikh Ispolzovaniye*, Moscow, Nedra Publishing House, 1973, pp. 8, 9.)

Although the plan for the development of Western Siberian oil was evolved in 1947, after World War II, it was not until 1960 that an oil and gas research institute was set up in Tyumen–with a staff of only 20 people. There are now 900 working there. Actual production operations are under Glavtyumenneftegaz.

Deputy Chief Fein, a native Leningrader, was evacuated to the east during the war. He graduated from the Oil Department of Perm University and worked in Bashkiria, then the largest center of the Soviet oil industry, before going to work in Tyumen in 1962. So he has been on the spot since almost the very beginning. In photographs on the walls of the administration building of the Institute, Fein is shown with two colleagues–the three of them, recognized as outstanding heroes in the development of the oil industry of Western Siberia, were awarded the Lenin Prize for working out the technology for extracting oil faster and cheaper, thus saving enormous sums of money and periods of time. It was a collective achievement, Fein made clear, not his personal work alone.

In fact, Fein stressed, the oil of Siberia is an all-people's project of the Soviet Union. There are workers there from all 15 Union Republics and from 20 small nationalities. There are especially many Bashkirs and Tatars, whose home areas are also oil-producing.

Work was started in the area on a very small scale. Actual production began in 1964, and the first oil, 209,000 tons, was transported in barges on the Ob to a refinery. Much exploratory work, at the beginning, had to be done in the winter when the swamps and rivers were frozen. And even today, much of the construction is still done in the winter.

There was considerable experimentation in the early years while seeking the best solutions. And it was for their solutions to these problems in the most efficient way that Fein and his colleagues were honored.

As our talk progressed, Fein and Kulakhmetov were able to illustrate the various techniques they described with the aid of the charts, graphs and diagrams around the

conference room walls. For example, there is the method of building roads over the swamps and laying a firm foundation for the well-drilling equipment–an area of several acres in the middle, say of Lake Samotlor, with the rich oil fields beneath it. Investigation proved that the area was too large to be drained without prohibitive expense and considerable time. Canals were rejected because they would freeze in the long winter.

The solution adopted was ingenious. Samotlor, in the language of the aboriginal Mansi people of the area, means Dead Lake. The water, on the average, is only two meters deep, and it freezes solid in the winter so no fish can survive. Thus there is no life in it, and it is dead. And the Soviet oil men took advantage of this.

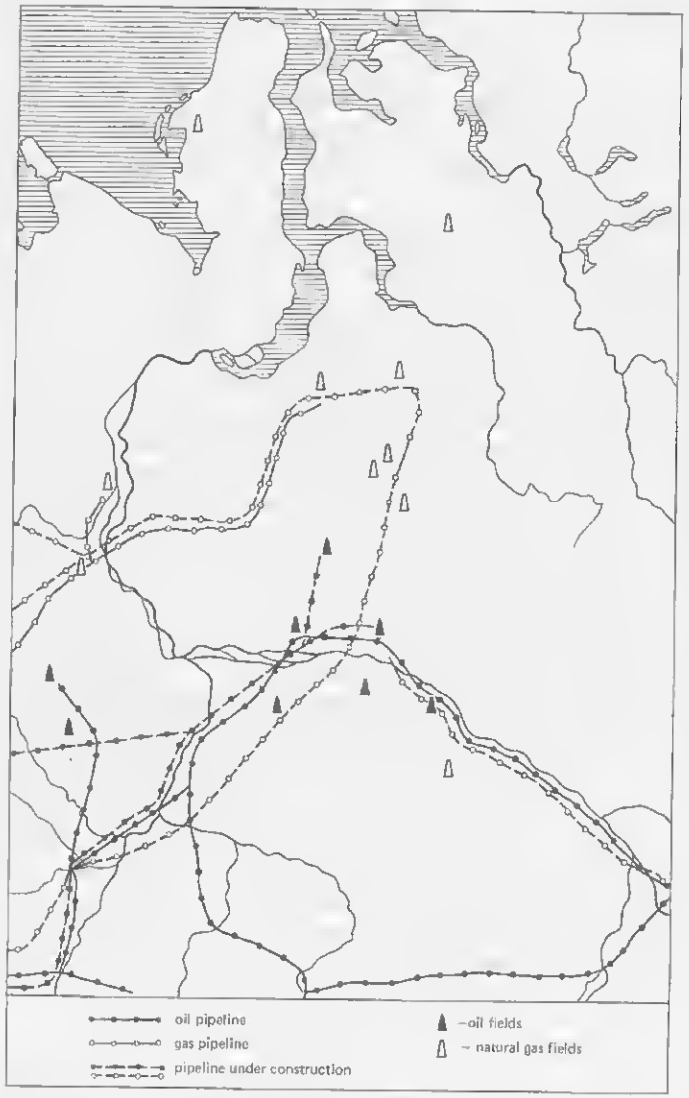
After the lake had frozen solid, the route of the road, and the several acres required for the well-drilling equipment and other necessary facilities for the oil extraction, were cut out of the ice, down to the lake bed. The space was filled with sand, reinforced with peat from the lake bottom and, over that, asphalt paving was laid. Then, after the thaw, the road was ready and ran to the firm-based island in the lake.

Throughout the oil area, main roads are built the same way, and secondary log roads, using similar technique, are covered with sand and last many years. In addition, there are thousands of kilometers of ice roads, with a layer of mineral insulation over the frozen turf.

The main roads, like the one to and on Lake Samotlor, cost a million rubles a kilometer to build. A lot, but still the cheapest solution, by far, and the most reliable. That cost, by the way, is comparable to that of main roads in the United States. The Samotlor road isn't a six-lane highway, but it is reliable and smooth–we rode over it, so we know from experience–and it must be of good quality to take the pounding it gets daily from enormous herds of monster trucks and special treaded vehicles.

NATURAL GAS IN THE ARCTIC CIRCLE

Although we talked mainly about oil, the gas resources of Western Siberia naturally came into the conversation. The map on the wall showed black dots for oil wells and red dots for gas wells, and there were lots of red dots.



Main Oil and Natural Gas Deposits
North and Central Western Siberia

The natural gas resources of Western Siberia are even greater in energy content than the oil and may be the largest natural gas reserves in the world.

These gas fields are north of the oil reserves – close to and in the Arctic circle, up into the Yamal peninsula which extends far into the Arctic Ocean.

Arkadi Lalayants, Vice-Chairman of Gosplan, told an interviewer:

"Our country has large available and prospected geological reserves of oil and still more considerable are our reserves of gas and coal. There is more gas in the territory of the USSR than in any other country. Taking into consideration that oil is a most valuable mineral raw material, we strive to ease the load on the oil industry through a rapid increase in the production of gas and a still wider application of coal, shale, hydropower and especially atomic power." (*New Times*, No. 52, 1977.)

In an all-out effort comparable to the development of Middle-Ob oil, and with even more long-run potential, the output of gas in this area is scheduled to quadruple during the Tenth Five-Year Plan period, accounting for most of the very rapid increase in Soviet gas production. Beginning, for all practical purposes, in 1970, by 1977 West Siberian gas production reached 68 billion cubic meters, and the plan calls for 155 billion cubic meters in 1980.

Hitherto output has been concentrated in several already famous fields – Medvezhye (bear), Vinganpur, Kholmogorsk. But in April 1978, with completion of a connecting pipeline and railroad, exploitation began of the world's largest known gas field, in estimated reserves, Urengoi. This "Siberian giant" is 167 kilometers long and 35 kilometers wide. Gas strata have been located at two depths, and it is expected that more will be uncovered with deeper drilling.

Production is scheduled to reach 58 billion cubic meters by 1980, 100 billion soon after and, ultimately, 200-250 billion. That would be 35-40 percent of the total gas production of all fields in the United States.

To reach 100 billion cubic meters, it will be necessary to drill 420 wells, to build 10 gathering and processing installations, a network extending 2,000 kilometers of pipeline for the collection of gas, and a factory for preparing natural gas condensate – all in a land of permafrost, with conditions even more severe than in the oil areas we visited.

The United States, by the way, lost a chance to get a goodly share of that gas because of the negative influence of diehard anti-Sovieteers in the Senate and the Pentagon.

Three major gas distributing companies negotiated the North Star project with the USSR, providing for large-scale shipment of West Siberian liquefield natural gas to the United States, but this was killed by anti-Soviet opposition within the United States. (See Chapter XIII for details.)

Instead, gas not being used in the Soviet Union is being contracted for mainly by European countries, socialist and capitalist. And the main pipeline now being built from Nadym, the central city of the West Siberian gas region, is not toward Murmansk but further south, to reach, finally, the western border of the USSR, so that part of the gas can go to European customers who are willingly cooperating. Thus FRG firms recently concluded a billion mark contract for equipping petrochemical works in Tomsk, which will use the casinghead gas from the oil produced in Tyumen oblast's Surgut and Nizhnevartovsk raions.

However, even in the negative U.S.-USSR trade environment resulting from the anti-Soviet terms of the Export Control Act of 1975, there are significant contacts and a certain amount of business between the two countries. Fein told me that an agreement for scientific-technical cooperation was about to be signed with Amoco, a subsidiary of Standard Oil Company of Indiana. He also said that despite the political obstacles to technical cooperation, Alaskan and West Siberian oilmen have exchanged visits and have good personal relations. Obviously he would like to see such exchanges increase.

And, as this is written, things look more hopeful for U.S. participation in Yakutian natural gas, farther east. After some years of negotiation and verification of reserves, U.S. and Japanese firms have tentatively agreed to advance billions in credits for equipment and pipe to be used in the development of these fields. Repayment will be in Yakutian gas piped to the Pacific, there to be liquefied for ocean transport. This will have similar benefits to those projected for the defunct North Star Project, provided opponents of detente in the United States do not succeed in scuttling it also.

It takes long negotiations and considerable expenditures to negotiate a deal of this magnitude. But, in the fluctuations of international relations, it takes little to hamstring it. For example, in 1978 the National Security Council and the Pentagon tried to get President Carter to ban the sale of oil equipment to the USSR. But by the year's end the pressure of manufacturers and big business was so great that Carter decided against the ban.

SURGUT

Fein's cooperation and interest in my projected book had a very concrete bonus. Although our trip plan programmed four days in Tyumen, that administrative center is actually about 700 kilometers from the oil and its workers. But I wanted to go to the oilfields, to see what was happening, to meet the workers and see the processes and construction Fein had described. Fein agreed that such a visit would be of inestimable importance to my project, and I was deeply appreciative of his efforts on my behalf.

He got on the phone and made the vital arrangements. That very evening we took off for Surgut and Nizhnevartovsk – the four in our party plus Sergei Fateev, the outgoing, smiling, extremely competent young director of the Tyumen regional radio station. He accompanied us to help with the local people, whom he knew, and to cover our visit for the local media, and we were delighted to have him along.

We arrived at the Tyumen airport with time to spare, and so were able to watch flight activities. From that experience, and later observations in the other cities in our itinerary, I could appreciate the tremendous scope of accomplishment. Air traffic is constant, and although the Tyumen-Surgut run isn't quite up to the hourly shuttle schedule from New York to Chicago or Washington, D.C., there are many daily flights between the two cities, as well as to other oil and gas centers, with connecting flights between. The airport at Tyumen vies with those of major metropolitan cities.

The hour and a half flight was uneventful, and the landscape below prepared us for the situation of Surgut. We flew over hundreds of miles of swampland, interspersed with taiga scrub pine trees. Desolate and uninhabited, it looked very inhospitable. But Surgut, when we landed, is a large and very busy city of 77,000. On our way to

the hotel, we could see the tremendous amount of construction going on in this modern, growing center which, only a decade age, was a small fishing village.

We arrived about 10:30 p.m. It was still light—this was May 21—and it was delightfully cool after the very hot weather in Tyumen. The smallish wooden hotel was more like a guest house, with its old-style Siberian carving on the facade. It was very comfortable, the service was efficient and the meals were very good.

Our windows overlooked a large expanse of the swamps that surround the city, even encroaching into its environs in many places. Pine trees grew in the dry places, and the water areas were large enough for outboard-motored boats to chug by with fishermen trolling. In view of the marshes, we were particularly glad that we were ahead of the vicious, virulent mosquitoes we had had the misfortune to meet in Tyumen.

(We had been driven out to see a nearby birch forest, popular with the residents as a picnic grove. It was beautiful as only Russian birch forests can be, and we got out of the car to take a walk and snap some pictures. But in two minutes we were dashing back to the sanctuary of the car, our ankles and legs coming out in bumps all over. Yuri Fein had told us that, with insecticides, the number of mosquitoes in the towns and on working sites had been reduced by 99 percent. And it is true that in Tyumen itself we were not unduly bothered. But we were very happy to have preceded the pests in Surgut.)

We anticipated a quiet Sunday, but how wrong we were! At 9 a.m., our Surgut host, Party ideological secretary Vladimir Trifonov—a capable organizer with a good sense of humor and friendly, informal manner—called for us. He was accompanied by young Alexei Tikhonov, senior engineer of the oil pumping station we were to visit.

But first we went to the gas compressor station. For every ton of oil produced in the region, we were told, there are, on the average, 70 cubic meters of casinghead gas. That amounts to about 6-7 percent of the calorific value of the oil—and on the scale of production in Western Siberia, that's an extremely important component.

The gas is being used to fuel the power plant at Surgut and to supply other local needs. It is also piped southward

to the Kuzbas coal basin, and liquefied gas is piped to petrochemical works at Tobolsk.

At the time of my visit, there was only one condensation station, with a capacity of 2 billion cubic meters per year—enough to handle about one quarter of the casinghead gas. The remaining three quarters was still flared, lighting up the sky in characteristic billowing torches close by the oil gathering station at the oilfields. However, another station was almost ready to start operation, and still a third was to be operative before the end of 1977, with another each year until, by the end of 1980, capacity is to be 12 billion cubic meters yearly. That will be enough capacity to process all the locally produced casinghead gas, according to the people at the compressor station.

This gas is earmarked to fuel a huge new petrochemical complex at Tomsk.

To indicate the scale of growth, by the end of 1977, the output of casinghead gas from this one oil area exceeded the total production of gas in the Soviet Union in 1940—3.4 billion cubic meters.

I interviewed a number of workers at the gas compressor station and at the pumping station, and I began to get some idea of the kind of people who go to the oil country—their motives, and how they live.

Pyotr Kushmiyev is chief machinist. He was born in the Ukraine, where he went to secondary school and then went to the Kuibyshev oblast where he worked for five years before he was invited to work in Surgut as a specialist. At first he lived in a hostel, but after four months he and his wife—they have no children—were assigned a flat with all modern conveniences. He gets 39 working days vacation each year, and in 1976 he went to Central Asia on holiday. His wife works on machinery at the oilfield.

Four nights weekly he goes to the oil technological school in Surgut, and on completion of the course he will get a professional diploma as a technician.

Kushmiyev's base salary as a highly skilled worker is 250 rubles a month. The regional and raion coefficients raise it to 520 rubles, and added to that is a bonus of 10 rubles per month for each year on the job, raising the total at the time of the interview to 570 rubles a month.

The people working in Surgut and Nizhnevartovsk get what amounts to a two-stage regional coefficient—the first for

working in Siberia; the second, and highest, for working in the middle or the far north. Altogether, the additions more than double the basic salary, to which there are various further bonuses – for outstanding work, for dangerous work, and the annual raise for staying on the job in the rigorous climatic conditions.

The gas compressor station is regarded as dangerous, but there have been no accidents in the five years he worked there, Kushmiyev said.

Lyudmila Tolkatch is a rank and file operator, whose job is to watch the control panel and ensure that operations are proceeding smoothly. She is in the fourth year of technical school and she plans to qualify as a technician. She has been working at the plant for two years.

She comes from Khabarovsk in the Soviet Far East, and she moved to Surgut with her family seven years ago because her husband's parents lived there and recommended it. She has two children, 13 and 7; the older is able to take care of herself after school; the younger stays at the kindergarten until Lyudmila calls for her after work.

The family has a two-room flat. Lyudmila shares shopping and housework with her husband, who is in the management of the power station and is studying to be an engineer. He is taking a correspondence course from a Novosibirsk engineering school, and he goes there for examinations with all expenses paid.

Lyudmila gets 350 rubles a month, including bonuses, with an increase of 10 percent each year. They also have 39 working days of vacation each year, and in 1976 they went to the Black Sea, by plane. She had a *putyovka* (voucher), and had to pay only 30 percent of the cost.

Alexei Tikhonov was our guide and host at the Nikolai Ostrovsky oil pumping station which we visited next. This installation and another like it in Surgut pipe the oil southward to join the famous Druzhba – Friendship – pipeline that carries the oil through the Soviet Union and to the socialist countries of Eastern Europe. The oil has a very low paraffin content so does not have to be heated to prevent its sticking. It also has an extremely low sulphur content – virtually zero – which means it is of the best possible quality environmentally.

Every 70 to 80 kilometers, there are intermediate pumphouses along the pipeline from Nizhnevartovsk and Surgut

to Tataria, to Almatievsk and the Druzhba pipeline. The oil is pumped at 7,000 cubic meters per hour, and it comes in at four atmospheric pressures. It is raised by pump to 22 atmospheric pressures in order to maintain its flow at 7 kilometers per hour.

Alexei was 28 years old and leader of the Komsomol organization at the pumping station. Of the 140 workers, he told me, the majority were young: 40 were in the Komsomol and 18 were members of the Communist Party. When he turns 30, he will apply for membership in the Party.

He has been in Surgut for five years, ever since he got his engineering degree at a Tyumen Industrial Institute in 1972. He worked at another pumping station for three years before taking the job at the Nikolai Ostrovsky station as chief engineer. Alexei is married and has a 5-year-old daughter. His wife, Lyudmila, works at the same station as an operator. They live in a two-room apartment. His parents also live in Surgut and help in taking care of the child.

With their high salaries, the Tikhonovs are saving for a car and may get a Zhiguli this year. Automobile owners in Siberia have the Canadian type gadget to plug into their cars to prevent freezing during the severe winters.

We had the opportunity to spend some time with Alexei and Lyudmila, as they were among those who hosted us on the unforgettable boat trip and picnic on the Ob Sunday afternoon. So I was able to ask them more searching questions than time allowed at the pumping house, and they were very cooperative. They even willingly worked out for me their basic monthly budget – income, and housing and utility outlays. Amounts are in rubles:

Job	ALEXEI *Chief Engineer*	LYUDMILA *Operator*
Base salary	180	126
Premium (%)	40	25
Premium amount	72	32
Northern increment (40% of the sum of base salary and premium)	100	62
Raion coefficient (70% of sum of base salary and premium)	176	109
Total income	528	329
Income tax	60	36

Take-home pay	468		293
Combined family income (take-home)		761	
Rent		9	
Gas		3	
Electricity		3	

Income tax, I was told later, is figured at 8 rubles 20 kopecks for the first 100 ruhles, and at 13 percent on everything above that. However, the figures the Tikhonovs gave me come out to slightly less than that formula.

The premium, at least in part, is for time worked in Surgut. The northern increment of 40 percent is standard for all "far northern" areas (in Novosibirsk, which is regarded as only "northern". the increment is 25 percent). But the raion increment of 70 percent is special for Surgut, Nizhnevartovsk and other special priority places.

A raion is a suhsection of an ohlast, more or less equivalent to a U.S. county, but generally much larger. Especially in the Siberian north, where the Surgut and Nizhnevartovsk raions are each about the size of New York State.

At the oil pumping station, I also spoke to Tatiana Salakhieva. She studied for five years at the Ukhta Oil Engineering Institute, graduating in 1976. She was given a choice of johs in different locations for the first three years after graduation, as is the usual practice, after which time she may go anywhere she wishes. She could have remained in Ukhta, capital of the Komi Autonomous Repuhlic, or chosen a joh in the Tatar Autonomous Republic, in Sakhalin, or Surgut. Ukhta, in the northeastern corner of the European part of the USSR, is being developed as an important oil region. Ahove the 64th parallel of latitude, it is actually several hundred miles further north than Surgut.

Tataria, with its older major oil producing area, ranges from the Volga to the Urals on a latitude with Moscow. Its capital, Kazan, was the historic stronghold of the Tatars in their battles with the Russians.

And Sakhalin, of course, is the large island off the Pacific Coast of the USSR.

Tatiana Salakhieva chose Surgut bacause she had been there on vacation and had liked it.

Her job is to supervise the operators who watch the machines. If something goes wrong, she fixes it or tells the mechanic or electrician what to do. But she gets only 270 ruhles–base pay of 130 rubles plus the honus for working in the north. She will get a 10 percent per year raise and she will be promoted if she shows that she is capable. But I was surprised that Salakhieva, an engineer, was paid less than the operators she supervises. She was. in fact, the lowest paid worker I interviewed in the oil country.

She shares a room with two other technical workers in a hostel, the practice for unmarried men and women. There is a kitchen and a huffet for those who do not want to cook. There is also a stove at the pumping station if workers want to cook lunch.

Tatiana does not plan to remain when her three years are up. She says she must go home to Tyumen to take care of her ailing mother. However, she still had a couple of years to go and who knows, perhaps she may change her mind.

Another worker I talked with was Anatoli Lazarev, a corpulent 40-year old machinist. He was born in Orel, Central Russia, and at the age of 16 went to Sakhalin where he finished 10-year school. did his stint in the army and became a miner. His wife also worked at the mine.

In 1960 his brother went to Surgut and in 1970 became manager of an oil pumping station. In 1974, at his brother's urging, Lazarev and his family moved to Surgut where hoth he and his wife got jobs as machinists at the same pumping station. Between them, they make more than 600 rubles a month. They work different shifts, and his mother lives with them in their comfortahle 3-room apartment, so they all share looking after the two children–aged 9 and 12 in 1977–and the household tasks.

However, in 1978 his wife would become 45 years old and be entitled to retire on pension. Yes, at 45. All women in the USSR can retire on pension at 55; in the Far East or Far North, there is a five-year reduction, to 50; and for strenuous or dangerous work, as in a mine, there is an additional five-year reduction.

So the Lazarevs have huilt a cooperative flat in Poltava oblast, in the Ukraine–the original home area of Mrs.

Lazarev. They like Surgut, hut think they will like the South better, and he will have no trouhle getting a good job there. Even though he will no longer get the Siberian honus, his wages plus his wife's pension will provide all the money they need.

Back at the hotel, we were early for lunch and took a walk, with Sergei Fateev, to see the satellite TV receiving station across the stream that flows through the swamp in hack of the hotel. We crossed the narrow wooden hridge and stopped to gaze with surprise at a ledge of ice–at least two inches thick–clinging to the bank of the stream. A relic of winter, when the temperature goes down to –50 degrees. The TV station was full of highly technical and interesting-looking communications equipment, but there was no one there at the time to explain it. We were invited to return later, but didn't have a chance.

Still Sunday, and after a very satisfying meal, featuring rahhit, we hoarded the mini-hus assigned to us for our stay and, with the addition of Alexei Tikhonov's wife Lyudmila, we drove to the Oh, the mighty river that rises in the Altai Mountains and flows north to the icy Arctic seas. Until May 7, just two weeks earlier, the river had heen covered with ice, we were told. And now we were to have a picnic on an island in its midst!

In was a memorable Sunday afternoon. First there was a 40-minute sightsee along the shore in the motor launch *Breeze*; then the relaxing interlude on the island with its hirch and fir trees, its flower studded fields. A small wood fire was huilt, and potatoes were buried in the ashes while preparations were underway in the boat's galley. The ensuing "picnic" was an Oh feast, with everything coming from the river from the lashings of caviar to the raw and frozen nelma, a special Ob delicacy, and the smoked fish. Everything, that is, except certain accents–the vodka from Rostov; wine from Hungary; and cognac from Armenia. One of the most enjoyable happenings of the entire trip, it was a time of fun, and songs, and camaraderie and rapport.

The next day, Monday, we had the opportunity to see the city at work. And now, whenever we think of Surgut, we think of trucks–little trucks, hig trucks, giant two-cabin trucks. Surgut is a city of construction–everywhere: housing, industry roads, stores, and schools and hospitals. And the

trucks are a steady stream, in and out of the city. But more of that elsewhere, when we discuss living conditions. And, likewise, something about the power plant we visited in the morning when I discuss questions of energy.

But in the afternoon from a cargo helicopter we had a two-hour aerial survey of the countryside for miles and miles around. The special heliport was an area of intense activity, with the 'copters taking off with loads of pipe. equipment and construction materials for far-flung sites, while others were landing. This aerial service facilitates supplying teams out in the field, workers who stay at the sites for varying periods and are flown back to their homes in Surgut for weekends and relief breaks.

From the air, as far as the horizon in every direction, were the swamps–patches of water separated by clumps of spongy tufts. Here and there were a few suhmerged trees, and along a flowing stream was a line of pine trees, following the meanders. The only signs of human incursion in this desolate scene were the rail line and a straight ribbon of road–with trucks rolling along it, of course–huilt under the incredibly difficult conditions described earlier in this chapter. That is, in the winter when the marshes are frozen. Here and there were flags of flaring gas flames; and about 60 kilometers from Surgut, we flew over Fedorovka oilfield where drilling is going on.

It was a unique experience, and we were sorry we could not take photographs. But we understood that the one prohihition against taking pictures is from the air, so instead you can get some idea of the swampland from the ground-level photos.

NIZHNEVARTOVSK AND SAMOTLOR

The next, and final, leg of our West Siberian oil experience was Nizhnevartovsk–also on the Oh River–35 air minutes from Surgut. The flight was very early the next morning, so as soon as we were driven to the guest house–there is no formal hotel yet in this oil frontier city–we were breakfasted. And then we were driven to Lake Samotlor, ahout 30 kilometers distant.

We were accompanied by Vladimir Litvakov, chief geologist of the Nizhnevartovsk oil and gas mining administration named after V. I. Lenin. An energetic man with decisive

features and untamed hair, he told us much about the geology and technology of the area.

Samotlor, one of the rich oil areas in the USSR, has three productive layers: at 1,800, 2,200, and 2,500 meters below the surface of the lake. Each layer ranges from 5 to 50 meters in thickness. Wells are drilled to all three layers, but currently only the top layer is being exploited. In the future, all three will be tapped.

Geologists opened up Samotlor in 1965 and exploitation started in 1969. We visited the monument at the site of the first exploratory well. To commemorate their union at Samotlor, newly married couples visit the monument after their wedding ceremony, laying the bride's bouquet at the monument in a pledge to continue their work.

Each year hundreds of wells are drilled at Samotlor. The best wells yield 1,000 tons a day, but the average is 200 tons—a fraction of what wells yield on the Arabian peninsula, but many times the yield of wells in the United States.

Litvakov detailed the new technology developed for the special conditions of Samotlor. New pumps, with five times the capacity of those now in use, are going to be installed for pumping water into the wells. There is the possibility that some pumps will be purchased in the United States from Reed Roller Bit and Halliburton, he thought.

The estimate was that Samotlor would peak out at 130 million tons per year in the early 1980s, and after remaining at that level for a few years would begin to decline. However, improved extraction techniques are being developed with the objective of raising the annual output to 150 million tons.

Litvakov stressed the tremendous contribution made by transportation people and construction workers. All equipment, supplies, etc., have to be brought in. In 1976, 4 million tons of supplies and equipment were brought in by river boat during the 150-day period of ice-free navigation, and in November 1976 the railroad from Tyumen via Surgut reached Nizhnevartovsk, greatly easing the transport problem.

The first roads in the area were made of logs and extended 90 kilometers. In 1976, 150 kilometers of paved roads were built on and around Samotlor—at the cost, as previously stated, of a million rubles per kilometer.

We were driven along one of those roads to the lake—a

straight cement two laner with an earthen shoulder on either side. It ran through a morass of swamps such as we had seen the day before on our arial foray around Surgut. As we neared the oilfield, we could see the flaming tongues of flared gas growing on the horizon.

The road continued into the lake and our first stop was one of the new rigs where drilling was in progress. The surrounding soil was sand, white sand like the desert, but it wasn't hot and there was a good breeze.

Before climbing up on the rig, the "bush" system of drilling was explained to us. The "bush" system is another important innovation, which brings about great economies in Siberian conditions, while helping maximize the yield of oil.

The underground productive layer is charted with a checkerboard of equidistant points. One well will be aimed at each of these points. The wells are started from "bushes" of 16 each, only a meter or two apart. They are drilled at angles designed to hit sixteen of the plotted points on the underground checkerboard.

Considering the difficulty of building a solid foundation for well-drilling, it would take several times more time and money to drill the same wells vertically, above each targeted point.

The oilmen faced the problem of how to move the rig a meter or two after each drilling so that the next well could be drilled at the proper angle. At first rigs were moved on railroad tracks, but a less expensive and more practical method was found to work—mounting the entire rig on airplane tires!

We climbed up onto the rig, went through it while operations were explained, and I was permitted to drill a meter toward the oil stratum! It probably disrupted work somewhat, but I asked a lot of questions and briefly interviewed several of the oilmen, from engineer foreman to apprentice worker.

Rifat Ibragimov, shift foreman of the drilling "bush" we visited, had the highest salary I came across in the oil area. He averages 900 rubles a month. He is an engineer, a graduate of the Oil Institute in Ufa, capital of Bashkiria, and he was invited to come to Samotlor with his wife and daughter in 1969. He was immediately given an apartment.

Ibragimov's is the best team—the "bush" has 25 workers on the four crews. The drilling goes on 24 hours a day, in

three 8-hour shifts. Four crews rotate, so on the average each crew works three days out of four. There is great emphasis on speed in drilling. The soil is soft, which makes fast drilling possible, but it is very tricky because of the large amount of natural gas. They had been drilling the site we visited for two days and had gone down 150 meters. They expected to reach the oil stratum at 1,860 meters, in 10-12 days.

The chief driller of the crew is Minulla Mukhamidinov, a veteran with 15 years drilling experience. His team takes first place in drilling accomplishment every year. Also from Bashkiria, he is 41 years old, has a wife and seven children ranging in age from 17 to one and a half years. He makes 700-800 rubles per month.

Evgeny Toloknov is an assistant driller. He had been working in the metal industry in Chelyabinsk, in the Urals, when he became interested in the oil development going on in Western Siberia and, on his own initiative, he went to Nizhnevartovsk in 1974. Once there, he completed vocational school and is now a mechanic. He is thirty years old, is married, has one daughter and makes 500-600 rubles a month. He plans to join the Communist Party.

And the last worker I spoke to, briefly, was Sergei Melekhov, an 18-year-old student at an oil vocational school in Bashkiria. He was working at the site only until November as part of the school training program, for practical experience.

We took photographs, and official photographs were taken by the photographer from a Nizhnevartovsk newspaper and then we went on to the oil gathering and pumping station Number Two.

The oil gathering stations on Samotlor have facilities for separating the oil and gas as well as pumping facilities for the products. Fortunately, the oil has an extremely low sulphur content so that desulphurization is not necessary.

There are 20 such sites at Samotlor, and each—covering about five acres—had to be constructed during the winter by cutting out blocks of ice and filling the spaces with earth and peat: the method I described earlier.

My interviews with two outstanding workers at the pumping station were especially informative and interesting. (There are 12 employees at the station.) The two, incidentally, had been friends since early childhood, had rejoined

forces in Nizhnevartovsk in the early stages of its oil development.

Evgeny Bolshagin had come to Nizhnevartovsk in 1965. He went to work at the first field to be developed in the area, Megion, west of the city. In the spring of 1970, he and four comrades were brought to Samotlor by helicopter. There was no solid ground to land on, and they jumped into waist-deep swamp. Even after they had improvised a base, it would take two men hours to sludge through the mire to get a bucket of clear water for drinking. Now—only seven years later—there is a substantial base with paved surfaces, roads connecting the station with the wells and the city, and all necessary facilities. Bolshagin stuck out his feet, pointing to his well-polished walking shoes which were quite adequate on the job.

He is section foreman, with the rank of technician, and he is in charge of the collecting and pumping station, which collects oil from 64 wells (four "bushes" of 16 wells each), or some 30,000 tons daily. There are also 10 pumps that pump a mixture of water and other substances into the wells to create pressure and increase the flow of oil.

The CIA report that came out after my return to the United States charged that Soviet oilmen are overpumping water into the wells, reducing the ultimate yield. Soviet experts claim that they are ahead of the United States in this technology and get more oil than the Americans do. Well, time may settle this argument, but offhand one is inclined to discount the CIA assertion because of its long-established practice of belittling everything about the USSR and of its predictions of technical and economic crises that haven't materialized.

Bolshagin had completed five years of vocational school in Bashkiria after finishing the regular eight-year school. He has a wife, who is an electrical technician, and two children; he makes 550-640 rubles a month, with bonuses. His vacation is 42 working days—a total of 49 days—and last year the family flew to Simferopol in the Crimea for vacation. His son is at a school for airplane pilots.

Then Alexander Suzdaltzev arrived. I had requested a meeting with him because I had seen his name listed on page one of *Pravda* as one of 64 heroes of labor from all over the country.

He had come to Nizhnevartovsk from Bashkiria even be-

fore Bolshagin, in 1962, and has been working at Samotlor since 1970. He is in charge of the technological regime of work at a "bush" of oil wells. Because of his expertise, he is frequently invited to different areas to lecture other workers on his acquired know-how in oil production.

He has been a Party member since 1969 and is a member of the City Party Committee, which meets every three months. His primary Party unit meets once or twice a month, depending on problems that have to be considered—such as the organization of events around the 60th anniversary of the October Revolution. There is much emphasis on self study by Party members, he said.

When I asked him about his objectives for the future, he smiled and said... "If I stay healthy, I will continue to work to give oil to the country."

LIFE IN THE CITIES OF THE FAR NORTH

What is it like to live in Surgut or Nizhnevartovsk, in a frontier post where the summers are hot and mosquitoes a menace, where the winter temperatures drop below minus 50°C, where 70 percent of the land is swamp and the rest taiga, where until recently there was nothing but a small fishing village on the banks of the Ob?

From Ellen's notebook:

"Because of the swamps, all construction had to be done in the winter. Until recently, all supplies had to be brought in by helicopter, and almost everything still has to be brought in: nothing grows in this desolate area. Except trees—so there is a lumbering industry. And there are fish in the rivers and lakes, thousands of lakes. And now there are greenhouses that grow vegetables and fruits.

"So there is not only the problem of developing oil, but in order to have people to do the work, there have to be houses for them to live in—and in order to build the houses, there first have to be roads and factories to make the prefab panels of concrete (there is sure *plenty* of sand), factories to make furniture, and plumbing supplies, and pots and pans, etc. *Everything* has to be made or brought in: clothing, toys, books.

"Then you need schools and nurseries, hospitals and medical supplies, cars and trucks, shops and laundries and all the other necessaries and some unnecessaries, that go to

make up a city. And a city that is growing at a gallop—from clusters of wooden one-room cabins with no plumbing, electricity or central heating to a modern city of 83,000."

To my mind, the construction of these modern cities has an importance comparable to the productive accomplishment in the oilfields.

In 1959, Surgut had a population of 6,000. When it was made a city in 1965, as oil production was getting underway, it had a population of 16,500. By 1970, it was 34,000 and, at the time of my visit, more than 77,000, looking toward 110,000 in 1980 and an ultimate population of 200,000-240,000.

Nizhnevartovsk was even smaller and, as late as 1970, only 16,000 lived there. By May 1977, it had 83,000 residents, and the plan was for 125,000-130,000 in 1980, and, ultimately, 250,000.

There was an all-out effort to provide decent housing for the workers who came to northwest Siberia to help develop the oil and for their families, who accompanied many of them. Initially, wooden houses were built, but since 1970, modern apartment houses have been constructed with prefabricated concrete panels. There new residential complexes are supplied with heat, gas, electricity, and all modern conveniences.

At present in Nizhnevartovsk, there are 6.5 square meters of housing space per capita on an everage, but 7.6 square meters for oil industry workers, who are favored. The objective is to raise the standard to 9 square meters per capita initially—the national standard—and then to raise that.

Housing construction is at the rate of 140,000 square meters a year, but that will have to be doubled, reaching 250,000 square meters in 1980. Even at the desired rate of 9 square meters per person, that would mean new housing for 28,000 a year by 1980.

From all over the Soviet Union, men and women, married and single, come to the oil frontier. Most of them are young, and although some cannot adjust and soon leave, the majority stay and build for the future. The average age is 25—there are only 1,000 pensioners (and remember that in the Far North retirement age is early). Each Saturday, the favored wedding day, there are about 26 marriages—almost double the all-USSR average rate, relative to population. Correspondingly, the birth rate of 31 per thousand compares

with an all-Union average of 18.5 per thousand in 1976. (*SSSR v Tsifrakh*, 1976, p. 22.)

MEETING WITH NIZHNEVARTOVSK'S LEADING COMMUNIST

The Communist Party plays an active, leading and guiding role, in all aspects of Soviet life. Its relationship to government bodies and enterprises is intimate, but there is a real separation of functions. The Party bodies develop policies and the outline of programs; the government officials and enterprise executives are responsible for and have the authority to work out the practical solutions to problems and to determine what the people under their jurisdiction must do. The Party collectives and individual members, along with the Komsomol members, are expected to lead in carrying out decisions and instructions and in mobilizing and inspiring all workers to do likewise.

The special, leading position of the Communist Party prevails everywhere, but its importance is enhanced in priority construction areas because the percentage of Communists volunteering for these projects is especially high and because the Party nationally pays special attention to the work there.

In both Surgut and Nizhnevartovsk, we were briefed by the local Party leadership, who cued us with facts and figures, problems and accomplishments, background and future prospects. In Nizhnevartovsk, Sergei Velikopolsky, first secretary of the city Communist Party Committee, told us that of course there are problems. And he and his comrades, the 7,000 Communists and 10,000 Komsomol members of Nizhnevartovsk, have the responsibility for solving them.

Of the 7,000 Party members, 34 percent are women; about 40 percent are technicians and engineers in the oil industry; their average age is 27-28, and they include members of 44 different nationalities. Members account for 15-17 percent of the workers, somewhat higher that the all-Union average of 10-11 percent.

The most outstanding drilling crews are made up entirely of Communists, and there are 11 Heroes of Socialist Labor, 22 with orders of Lenin, 17 Candidates of Science, 7 laureates of Lenin and State prizes. The heads of enterprises and most middle level executives are Communists.

Among the 10,000 Komsomol members are shock Komsomol construction brigades. And in the summer, student

building teams from all over the country, organized by the Komsomol, come to Siberia to work and gain experience.

There are 12 full-time Party workers on the city committee, which doesn't seem to be much for an organization of more than 7,000. And there are 130 primary Party groups and 257 shop groups. Through them the most involved, most energetic, optimistic and committed thousands of workers are organized for whatever has to be done, and they provide the moral leadership, encouragement and assistance for the entire population.

Velikopolsky proudly pointed out that every part of the country helps in developing Western Siberia. In 1977, 750 million rubles (more than $1 billion). was invested in the Nizhnevartovsk raion alone–400 million rubles in Surgut. The per capita investment amounted to 6,500 rubles, compared to the all-Union 500 rubles, itself a high figure.

The investment is worth it, the Party secretary assured us, for each MONTH the area supplies the country with oil worth the full year's investment. Calculations confirm this: in 1977, production in the area was at the rate of about 12 million tons per month. At the world price of about $100 per ton (1977 priced), that amounted to 1.2 billion dollars, or 900 million rubles.

What kind of problems are faced by Nizhnevartovsk?

In this five-year plan period, for example, there is being built a large new city center, with provision for cultural activities: another movie theater, a cafe, library, etc. Already there is an ice-hockey stadium–it was next to the guest house where we were staying–and an outdoor theater. Two new maternity hospitals are being built–the present one is very inadequate!

Each year, 1,400 new places in nurseries and kindergartens are provided. But the demand is five times greater. Each year a large new school, with a swimming pool, is built to accommodate 1,176 pupils. But that is not enough, and the schools still operate on two shifts. In 1979 three new schools will be built, so by 1980 there will be a total of 13.

Each year, about 1,000 new children are brought to the city by their parents and 1,500 new infants are born, adding a total of 2,500 to the potential school population. And because there are not yet enough nursery places, very often the mothers have to stay home rather than go to work, as most of them would prefer.

The countrywide solicitude for children had an especially visible expression in Nizhnevartovsk, where we stopped to walk through a well-stocked children's department store: dolls, pull toys, clothing, furnishings, wheeled vehicles – all sorts of supplies. So many things still to do – but already a special store for children!

In Surgut, it was much the same. The 10th Five-Year Plan will provide more than 15 kindergarten-nursery units for 280 tots in each; five 10-year schools, each for 1,076 pupils; two houses of culture, one with an auditorium for 600 and the other for 1,000. There is already a music school attended by 240 students and, in addition, music lessons are given in other schools; all schools have music departments. A new school specializing in music, art and dancing is in the current plan. And there is an oil technical school for 700 full-time students plus evening courses for workers who want to train for leading posts in the oil industry.

Both cities are getting more and more settled, resembling less and less jerry-built, crude frontier towns. Roads are paved; residential areas have shopping, educational and recreational facilities; refrigerator cars, now that the railroad line has been completed, provide fresh fruits and vegetables – in addition to the produce grown locally in greenhouses and that brought in by ship during the navigation season.

Velikopolsky said:

"Visitors from the United States and other countries are amazed at what has been done in so short a time – constructing roads and buildings on frozen soil and in swamps; producing oil under extreme conditions; providing a city for many thousands of people to live a good life in, etc. They are struck by the optimism of our people and they are convinced that our plans will be realized. They are impressed by the enthusiasm of the youth."

What are the most outstanding problems? I saw a closeup of one of the sore spots, an as yet unsolved problem: *domiks*, the small, usually one-room shacks that cluster here and there in both cities.

In Surgut and in Nizhnevartovsk we were told that 85-90 percent of the people live in good quality housing – about 70 percent in modern concrete panel apartment houses, the others in older but sturdily constructed wooden houses.

What about the remaining 10-15 percent, who live in temporary housing?

Well, for example: our hostel at Nizhnevartovsk was about 100 meters from the Ob. Taking a walk to the river, I made my way through a rather dense cluster of *domiks* – some converted railroad cars, some built of local building materials. These structures have electricity, curtains at the windows, and even identifying street numbers tacked onto them. And there is no sign of the filth of the squatter slums surrounding the hovels of the poor on the outskirts of cities in the West or in developing countries. But these small *domiks* can't be very comfortable in the Siberian winter, nor very pleasant for children to grow up in. I asked about the *domiks*, and here is the story:

The enterprises of the West Siberian oil country are at liberty to send people to any areas of the USSR to recruit skilled workers, engineers, etc., who meet the specific needs of the oil, construction and other vital new industries. They have the right to advertise, to visit factories and talk to prospective workers.

Workers invited to Surgut, Nizhnevartovsk and other oil and gas centers are guaranteed apartments for themselves and their families. But there are thousands of others who just arrive, without invitation.

Many have excellent skills – like the machinist from Chelyabinsk. Others are young and energetic, without special training, but with an adventurous bent, lured by the high wages. All are welcome: there is a chronic labor shortage and there are jobs for all able-bodied newcomers. And if they are single, there is place for them in the hostels.

But some whole families come in, and they do not want to be separated. Or two young people meet, fall in love and decide to get married. There is no apartment for them and they do not intend to wait it out in their separate dormitories. Unfortunately, but understandably, they have to make shift as best they can until an apartment can be allotted to them. So they arrange to take over a *domik* from a family moving into an apartment. Or they build their own. And sooner or later – we were given the impression that it is usually sooner than later – they are properly housed.

And that is how, and why, the *domik* enclaves came to be. The city administration wants to get rid of them and, in principle, when a *domik* family moves into a regular apart-

ment, the *domik* is supposed to be demolished. But in practice, the officials do not try to enforce an unenforceable directive.

Thus, this blight is apt to be around awhile. But at that, it would be well to remember that similar conditions, supplied by employers as the ONLY habitation for the duration of the job, are the fate of *most* workers taking jobs in remote, climatically inhospitable places in capitalist countries.

So far I have concentrated on the basic living conditions of workers in or close to Surgut and Nizhnevartovsk. What about workers in the field, in areas not connected to centers by road and dependent solely on aerial communication? In such cases, everything possible is done to provide conditions for a stable family life.

Many workers have permanent apartments in an established city. They are taken by helicopter to the field, where they live in temporary housing units for the duration of their shifts, which last for several days. Then they are airlifted back to their homes and families for extended weekends.

In other areas, as more and more of the new fields are being opened hundreds of miles from any of the few established cities in the West Siberian oil and gas region, it is very difficult, expensive, and too time consuming to provide commutation by helicopter. Nor are there any connecting roads which would enable trucks to deliver the supplies to construct prefab panel dwellings. And there are not enough workers to justify the construction of complete cities, with all facilities. So in these places, wooden houses are being built in the more or less traditional Russian style. (In this Five-Year Plan period, 300,000 square meters of such wooden houses are being built.)

For example, far to the west of Nizhnevartovsk is Khanti-Mansiisk, the administrative capital of the vast region inhabited by the 28,000 Khanti and Mansi peoples. These stockbreeders and fishermen are spread over an area approximately the size of Nevada and Utah combined, so their center was merely a small village. However, in the interests of the expanding oil and gas industry, it has been built up to provide the essentials for the influx of workers and their families – new wooden houses, schools, stores, etc. It appears, from the article in *Pravda* that described it, that not all of the amenities have yet been provided,

and it was not clear just how many cultural, educational, recreational and other aspects of a well-rounded life are planned. But at least families can be together in moderately comfortable surroundings. (S. Vtorushin and A. Murzin, *Pravda*, June 17, 1978).

To a visitor, the construction of Siberian cities under the difficult conditions of climate, geography and overwhelming vastness of area is a stupendous achievement. But Soviet critics are far from satisfied.

S. Vtorushin and A. Murzin, *Pravda*'s extremely able investigative reporters for the Tyumen area, very sharply and concretely criticize the ministries responsible for shortcomings in the housing program:

Wooden houses (in outpost cities) are of poor quality, depressing in appearance and uncomfortable. It should be a priority task of the appropriate ministry to correct these faults – to see to it that the houses are well constructed, attractively designed, and can withstand the severe climatic conditions of the North.

The ministries have not seen to it that enough factories have been built in the principal oil cities to supply sufficient large panel components for apartment houses. As a result, panels have to be brought in by boat, and the capacity is insufficient.

In eight years, the Ministry for Industrial Construction has not created a single good collective of construction workers. There is a serious shortage of labor – 10,000 men in Tyumen – and the available workers are poorly organized and poorly disciplined. The Ministry must promptly help Tyumen overcome its shortcomings in this respect.

There is no organized supply of sand and gravel, which have to be brought in from far away. It's supplied by "personal arrangements" between enterprise leaders, and there is much time lost in waiting for materials. A special factory, planned for the Sverdlovsk oblast to produce these materials for the oil region, is far behind schedule.

They were particularly sharp in their criticism of Tyumen, the administrative headquarters of the entire West Siberian oil and gas region. Despite the fact that considerable effort and substantial funds were allotted for the construction of the city, which now has a population of about 400,000, this oblast center was poorly planned and badly built. There is not now, nor is there a plan for, a

single attractive boulevard or square. Nor has the city a modern citywide engineering network or rain drainage runoff system. Local administrators should most urgently see to the development of Tyumen, the writers said.

And we agree with that. We found the airport and hotel facilities inadequate, by modern standards and in comparison with other Soviet cities, even in Siberia. Many of the streets were unpaved. The palace of culture of the oil workers, a modern and well-designed, well-constructed building with imaginative and stunning murals, was unfinished.

Vtorushin and Murzin conclude: "The ministries and agencies developing the region must remember that the problems that exist in Western Siberia today are of concern not only to the people of Tyumen and the rest of Siberia, but to the entire country. They demand special attention and special responsibility."

If these critics are correct, it would appear that proper central organization and planning, and sufficient financing could rapidly clear up the problem of *domiks* as well as other shortcomings in living conditions. Certainly this would have a favorable impact on the productivity of labor!

Satisfactory housing is a crucial factor in keeping a stable labor force. At the electric power plant in Surgut, which provides housing for all its personnel, the labor turnover is less than 20 percent—which compares favorably with most enterprises in the United States. But, according to the director, the turnover is more than that in enterprises whose workers are poorly housed.

We tried to be objective—and found ourselves overwhelmingly impressed with the achievements of the past decade. Of course we saw the problems, the difficulties, the contradictions. But a sympathetic visitor can conclude only that if the incredible physical hardships and engineering-scientific problems have been solved with such ingenuity, given the enthusiasm and integrity of most of the people involved, the bureaucratic setbacks will be overcome and the challenge of the frontier will be overfulfilled.

THE U.S., THE USSR, AND OIL

Prior to World War II, the Soviet petroleum engineering industry was at a low level of development, both at the production and refining levels. U.S. officials and oil company executives, supporting the cold war, imposed a complete embargo on all petroleum products, equipment and technology. They thought that without U.S. help, the USSR would not be able to recover from wartime destruction, let alone reach the Party's seemingly extravagant goal of 60 million tons of oil by 1960.

The actual achievement was 148 million tons!

And by 1969, when the U.S. Government started, step by step, to ease the ban on sales of petroleum equipment and technology, the Soviet Union was only five years away from surpassing the United States in the output of oil. The relatively small amount of U.S. sales since 1969 could not have had a decisive impact on the tremendous Soviet advances in oil production, which have made that country the world's largest producer by a wide margin.

But the men of the CIA, Brzezinski and Henry Jackson, those whose hatred of socialism is so intense that it bars rational calculation, are again shrilly urging renewal of the pre-1969 ban. In 1977, when we were seeing at first hand how surely and swiftly West Siberian oil was forging ahead, the CIA was preparing to issue a report of an alleged "crisis" in the Soviet petroleum industry. That report, soon widely publicized, claimed that due to mismanagement and water flooding, production at Samotlor had declined precipitately as early as 1975, that by 1985 the USSR would have to end its exports of oil and would become a net importer.

This not only flew in the face of what we ourselves had witnessed, but it was later exposed as completely fraudulent by an authoritative Western study. I'll come back to that later. The aim of the dishonest CIA study was to convince the public that without U.S. "technical assistance" the Soviet Union could not solve its supposed "energy crisis". And it aimed to withhold such "aid" in order to weaken the Soviet Union, plunge it into a crisis, and advance the aggressive military-political plans of the Pentagon and the Far Right in U.S. politics.

Their delusions, if permitted to prevail as national policy, can be extremely harmful—not so much to the Soviet oil industry as to the U.S. economy, and above all to the cause of world peace. And delusions they are. It is absurd to think that the U.S., which could not stem the powerful advance of the Soviet oil industry in the wake of World War II by withholding economic ties, could do so

now, when the Soviet Union can make all kinds of industrial equipment, and has the largest, and extremely effective, geological-exploratory service in the world.

It is true that the United States still has some points of technical superiority over the Soviet oil industry. U.S. companies are ahead in off-shore drilling and have a much larger park of oil mining equipment, especially drilling rigs and their auxiliaries. But there are other aspects where Soviet technology is superior, especially in mining Far Northern oil and gas. But the most important factor is that, thanks to the advantages of the socialist system, the Soviet oil industry is having much better results.

Usually no single U.S. company has sole ownership of a large enough contiguous tract of oil to permit it to carry out on a significant scale such technical devices as the "bush" system, which reduces costs and maximizes the output of oil. U.S. companies hold back production in order to pressure the U.S. Government to remove limitations on prices and to grant tax concessions. Fluctuations in market demand also have a negative impact. And many of the tens of thousands of rigs in operation are used for private speculative ventures, with a very high – and increasing – percentage of "dry holes".

Meanwhile, the ongoing work of Soviet research institutions and the knowledge gained by the experiences of the hundreds of thousands of Soviet oil and gas industry workers, aided by the international exchange of technology with socialist and capitalist countries, promise to narrow and close the remaining gap with U.S. technology in the oil and gas industry.

Basically the technology of oil production is global: it is neither capitalist nor socialist. Engineers, workers, geologists have similar jobs in both societies. It is the social orientation of their lives that is decisively different, and the difference is nowhere so marked as it is between those geographically comparable areas – Alaska and Western Siberia. Large deposits of oil were discovered only a few years earlier in Siberia than in Alaska.

In 1977, production of oil in Western Siberia alone was already about 20 percent more than in Texas and four times the likely production in Alaska in 1978. Alaskan oilmen visiting Siberia, my Soviet hosts reported, said that the development in Western Siberia was three times as fast as that in Alaska. Why?

Creation of the oil industry of Western Siberia is a top priority task in which the whole country participates, directly and indirectly, and which the whole population supports. In the towns and oilfields of the Middle Ob, I saw and felt the tremendous power, creativity and triumph of the accomplishments of the hundreds of thousands of oil and gas workers, construction workers, engineers, geologists, managers and political leaders, backed by the planning, capital and industrial might of the entire Soviet Union.

The construction of socialism involves a new kind of adventure, heroism and risk. Under capitalism, great quests were, and are, generally financed by those interested in personal enrichment or national or class conquest. The financiers and generals have been accorded the honors, while the trail breakers, the real heroes, were victims of exploitations who suffered danger, hardship, disease and often death.

The discovery and drilling of oil at Prudhoe Bay on the north coast of Alaska was a feat comparable to that involved in developing a major oil production area in Western Siberia's swampland. The construction of the trans-Alaska pipeline can also be compared with the construction of pipelines from Siberian oil and gas centers to consuming areas in Siberia or to mainline connections with the European part of the USSR.

But the Alaskan effort was essentially a project that has had little lasting impact on the life of Alaska. There was a boom, a rapid growth of population and income, while the pipeline was being constructed. And thereafter there was a slump. Unemployment increased, people left. For three years – 1964, 1965 and 1966 – Alaska led the 50 states in growth of personal income. But in 1977 it was in last place, by a wide margin, with a decline of about 6 percent in real personal income (adjusted for changes in consumer prices). (*Survey of Current Business*, August 1977, p. 17; Commerce Department release, BEA 77-82, November 8, 1977.)

A *New York Times* headline read: "Fairbanks: From Pipeline Boom to Bust." The text reported: "Unemployment is at about 18.2 percent and the labor force has declined significantly. Retail sales are down...." Of 4,500 active members of the Laborers' Union, "only 1,000 have jobs". (*The New York Times*, June 27, 1978.)

Alaskan oil was a high priority matter for the companies

that own a share of it and are profiting handsomely from it. True, the state of Alaska gets a significant revenue in royalty and taxes from the oil. However, only a handful of the native peoples on Alaska, among the worst off of the minority peoples in the United States, have obtained employment in the oil industry. But they have suffered from the extraordinary inflation resulting from the pipeline boom, which has also contributed to the disintegration of their traditional means of livelihood without admitting them to significant participation in the new industrialization. Alaskan oil was developed in conflict wth rivals who didn't want additional supplies to come onto the market and with environmentalists who feared the impact on the delicate ecology of the Far North.

Even now, with Alaskan oil flowing, California capitalists who would logically provide the natural market do not want it. It interferes with their existing market monopoly. Nor do tbey want to permit construction of a pipeline from California ports to the East. So the companies owning the Alaskan oil are asking permission to sell it to Japan at the very time that the national government in Washington is calling for more domestic production in order to reduce the need for expensive oil imports.

Alaska was featured in an especially attractive issue of Exxon Corporation's quarterly illustrated magazine, *The Lamp*. One article was about "Alaska's People" and, understandably, it focused on those who have done well in Alaska. But I was struck by two facts: (1) each person is on his own, lives and competes as an individual, with individual objectives. Society has no responsibility to them and they, with rare exceptions, feel no responsibility to society–except for one native American woman who is president of the North American Indian Women's Association, which is involved in political struggle.

(2) Moreover, despite the very high wages, most people have poor housing conditions, living in isolated shacks and trailers without running water or other conveniences. (*The Lamp*, Winter 1977.)

As for the workers who built the camps, they lived as expedition members in temporary structures, working 12 hour shifts with no basis for establishing permanent family life. According to press reports, holidays were spent mainly in town featuring bars and houses of prostitution.

Even now, with production in full swing, there are no permanent residents, no community life, at Prudhoe Bay. The supervisory and other key employees live in comfortable quarters for work watches of 8 days, 12 hours a day, and then fly to their homes and families hundreds of miles away for 6 days off. But the great majority of workers, numbering thousands, are contract workers toiling 12 hours a day for 8 or 9 weeks. Then they get only a week off, under conditions basically the same as when the pipeline was being built.

The Soviet approach is markedly different. The ultimate objective of economic development is the advancement of the people's welfare, and their opportunity for a full, creative life, with maximum fulfillment of their potentialities.

True, workers and engineers live in frontier conditions at new remote oilfields; but wherever possible, they are supplied with permanent residences in base cities within helicopter-commuting distance. Initially Tyumen was the base city, and expeditions flew out from there for "watches" of 4-6 weeks and then were returned for a comparable period. But as rapidly as they were able, real permanent base cities were built up at Surgut and Nizhnevartovsk, which are within helicopter-commuting distance of the largest oilfields, and at Nadym, much further north, for workers in the gas fields. There are other centers as well, already operative, and more in the building and planning stages.

Thus socialist planning avoids regional booms and busts, just as it avoids general economic cycles. The network of industries in Surgut and Nizhnevartovsk steadily widens, first to include those that supply and service the oil industry and then broadening out to encompass other resources, such as lumber and fisheries, and then to provide various consumers goods and services, construction, etc., and finally expanding to the processing of the raw materials found in the area.

The electric power station we visited in Surgut is a case in point. Already large, and growing, it is fueled by local casinghead gas and it supplies all of the industrial and residential electricity needs for Surgut and Nizhnevartovsk. By 1980, its capacity will be double that at the time of our visit–six turbogenerator sets with 210,000 kilowatts of electrical capacity each. We saw the building under construction for the additional six blocks, and in December 1977,

Pravda reported the commissioning of the first of these.

Thus, long after Surgut and Nizhnevartovsk lose their leading position as oil producers, they will be major all-around industrial centers, part of a new, modern technically and socially advanced Siberia – the most rapidly growing and dynamic region of the USSR.

And it is important to consider that these social advantages have their positive effect on production of Siberian oil and gas. Oil production prospects, as sketched by Fein and Litvakov in our talks and as detailed in the Soviet press, are far more optimistic than the CIA bad mouthing.

During the current five-year plan, Western Siberia is scheduled to supply all of the increase in Soviet oil output, and then some. That is, overall output in the rest of the country is declining somewhat: some oldfields and oil regions have passed their peak of productivity. And, possibly, drilling in some other areas has been curtailed for the present because there is a limited amount of drilling equipment and Western Siberia has priority.

However, this does not mean that overall Soviet oil output will stop increasing in the near future. Continued geodetic and exploration work is going on. "So far, most of our fields are taking oil from the Mezozoic layer," Fein explained in Tyumen. "But there is more oil in the pre-Paleozoic layer for future development. And a new oil region in the Tomsk-Novosibirsk area is awaiting development."

In fact, it did not have to wait long. In July 1978, *Pravda* reported that oil production in the Tomsk oblast would equal 8.5 million tons in 1978 and would double by 1980. A new eastern urban neighbor of Nizhnevartovsk, Strezhevoi, had sprung up. Oilfields and workers' settlements were being constructed in remote swamplands "where neither people nor birds lived". And research institutes were working on opening up the very deep pre-Paleozoic layer. (*Pravda*, July 14, 1978.)

I asked: "In the United States, propaganda is that the world is running out of oil. What is your estimate of the period of continued growth of oil output in Western Siberia?" And Fein replied: "I have a small son in school. There will be enough oil here for his grandchildren. Our production will increase to the year 2000, and we hope it will continue to grow after that."

But there are other important fields in Western Siberia which, in 1978, were producing, together, as much as Samotlor. And that year alone, eight new fields were opened up and the volume of drilling increased. And "who knows," Fein said, "maybe we'll hit another Samotlor."

And that's just in Western Siberia, without taking into account the equally huge areas in Eastern Siberia and in the Far Eastern areas and the off-shore areas, such as the Sakhalin shelf now being explored with the aid of Japanese equipment and credits.

At any rate, for the whole region production is beating the Tenth Five-Year Plan goals. Actual output in 1977 was 2 million tons above the plan. And the new plan for 1980 is 5 million tons above the original objective. At 315 million tons, it will be more than double the output only five years earlier.

A still more potent assurance of the continually growing Soviet energy potential is in the certainty that natural gas output will be rising for generations to come, as indicated earlier in this chapter.

The following table shows the actual and planned growth of oil and gas production in the Tyumen oblast, compared with total Soviet and U.S. output in 1977.

Year	*Production oil million tons*	*natural gas billion cubic meters*
Tyumen oblast		
1965	1	3
1975	150	38
1980 Plan	315	155
Strategic Goal (1990?)	500	450
USSR, 1977	546	346
United States, 1977	403	548

Sources: USSR, Tyumen oblast, *Krasnaya Zvesda*, June 6, 1978; *Nedelya*, No. 24, 1978; *Pravda*, Jan. 28, 1978; USA, *Monthly Bulletin of Statistics*, UN, June. 1978.

Thus the West Siberian oil people expect to reach a level of oil output at an unspecified date – perhaps by 1990 – almost equal to total Soviet production in 1977, and exceeding by one-quarter total U.S. output in 1977. They expect to reach a level of natural gas output exceeding that of all the Soviet Union in 1977 by one-third, and equal to 80 percent of the actual U.S. level. Obviously, if these goals are

reached, total Soviet output will be far above these levels.

Considering these factors, I believe that the CIA predictions of a Soviet petroleum crisis in the 1980s represent wishful ill-will, designed to encourage the "tough" foes of detente.

So, what about the CIA predictions of an oil crisis in the Soviet Union? A Swedish petroleum research organization issued a counterreport in 1978, exposing crude mistakes in the CIA study, including a confusion of Samotlor with a lesser field. It found that the USSR, far from exhausting Samotlor and other fields, was deliberately producing below capacity to maintain output longer. Instead of a crisis and reguired oil imports by 1985, Petro Studies, the Swedish organization, predicted that the USSR would triple its oil exports to Western countries, earning $20 billion a year therefrom. (*Miami Herald*, Sept. 14, 1978.)

The CIA-Brzezinski campaign did succeed in persuading President Carter to put sales of petroleum equipment to the USSR under case by case review, which will hamper future transactions, in view of the unpredictability of U.S. official actions, given the political pressures and prevailing anti-Soviet propaganda campaign.

During 1978 petroleum equipment was the leading item in U.S. industrial exports to the USSR. The Brzezinski-Jackson-CIA campaign can only hurt the U.S. economy, U.S. business and workers. And people everywhere can lose by the worsening of the international atmosphere.

The CIA campaign became more strident in 1979 as the growth of Soviet oil output significantly slowed, increasing only 2 percent in thc first 10 months. I do not know whether this slowdown was due to special problems in the oil industry or to general problems which adversely affected all Soviet industry in 1979. But at the same time, natural gas output continued to rise at an above-plan rate of 9 percent.

I was unable, because of scheduling difficulties, to arrange a visit to Prudhoe Bay. But in August 1978 I did visit the Anchorage, Alaska headquarters of British Petroleum Corporation, which has a 53 percent interest in the Prudhoe Bay field and has operational charge of one of the two sections in which the field is divided.

Charles Towill, public relations director for British Petroleum, answercd my questions and supplied me with reference material about Prudhoe Bay.

The 16 owning companies agreed to unitized operation of the entire field, with British Petroleum the operator of the Western division and Atlantic Richfield (ARCO), the Eastern division. In this way the owners have provided lor themselves some of the technical advantages of socialism.

The setup follows that of Samotlor in all major particulars. Solid pads are constructed in the swampy tundra, with a thick layer of permafrost underneath (this is different from Samotlor, although similar to the situation faced by the Western Siberian gas drillers further north). By a variant of the bush system, a number of wells are angle-drilled from each pad. These are aimed so that each well drains 160 acres of the oil-bearing strata. At first the drilling is straight down, but at a certain depth they turn to angle drilling, using turbo drills - quite possibly those manufactured by Dresser Industries under Soviet license.

I do not know to what extent the Soviet experience influenced the companies operating in Alaska, or to what extent the latter independently arrived at the same solutions. However, since Alaskan oilmen visited the already operating Samotlor field well before production started at Prudhoe Bay, it is reasonable to assume that they benefited significantly from the Soviet experience.

Now, according to Towill, the U.S. and British companies operating in Alaska have some technical achievements from which the Soviets might benefit. In particular, the USSR is interested in acquiring drillpipe insulating material supplied by General Electric. But if the cold war forces have their way, this will be prevented.

Their furious campaign is out of tune with the times and is meeting increasing resistance within the United States. A large majority of the American public favors detente. Business people, including those involved with oil equipment, are more actively combating the CIA-Brzezinski campaign. Internationally the opponents of trade and detente are isolated. Prospects are good that the anti-Soviet campaign will be defeated and U.S.-Soviet cooperation in oil and gas extended for the mutual benefit of both countries. And, having visited Alaska, seen its incredible scenery and met its pioneering people, I am hopeful also that the people of Alaska will find ways to benefit from the social accomplishments of the Soviet people in Western Siberia.

Chapter III

ELECTRICITY

"Communism is Soviet power plus the electrification of the whole country."

V. I. Lenin,

Collected Works, Vol. 31, p. 517.

Without electricity, there would be no modern industry, and this force – the cleanest form of energy – has been an important point of concentration in the development of Soviet power since its earliest days, when Lenin singled out electrification as the key element in the industrialization of the country. The productivity of labor is closely connected with the degree of electrification, as is an advanced standard of living – from light to refrigeration, with a host of other uses in between.

A study of electric power was, therefore, high on my agenda and we were fortunate to be able to visit the USSR Ministry of Power and Electrification in Moscow where I was well briefed before we left on our travels. And before our final departure we had visited two electric power plants – one in Surgut and one (nuclear, which will be discussed in the following chapter) in Novovoronezh – and three plants which manufacture turbine generators for electric power plants – at Novosibirsk, Yerevan and Leningrad. I asked a lot of questions and came away with a great deal of information about this very complex but essential segment of industry.

In 1975, output of electricity in the Soviet Union had increased 520 times in comparison with 1913, whereas industrial production as a whole rose 131 times. Until about 10 years ago, the priority growth of electricity was specified in Soviet five-year plans. Since 1965, electricity output has been scheduled to increase just about in line with industry as a whole. Thus, in the Tenth Five-Year Plan, for the period up to 1980, output of electricity is to increase 33 percent; industry as a whole, 36 percent.

However, electricity is used throughout the economy, not

only in industry, so perhaps it would be more reasonable to compare the growth in output of electricity with that of the national income, which is scheduled to increase by 26 percent this five-year period.

I asked about this when I met with Yegor Borisov, the Deputy Minister (at that time the Acting Minister) of Electric Power and Electrification, and seven other key specialists at the Ministry.

Borisov did not directly explain this, but he emphasized that the pace of development of electricity continued to be very fast and that each year the plan is overfulfilled. He pointed out that there are certain priority areas of rapidly increasing electricity use – e.g. agriculture.

Consumption of electricity in agriculture jumped from 48 billion kilowatt hours in 1970 to 74-75 billion kwh in 1975, and the Plan calls for 130 billion kwh by 1980. That would be close to 10 percent of total consumption and represent a tripling in 10 years. This is an essential factor in the intensive drive to raise farm output and to put it on a stable industrial basis. For example, a large part of the agricultural consumption of electricity is for irrigation, and massive irrigation projects are central to continuous efforts to overcome the unfavorable climatic conditions faced by Soviet agriculture.

He also pointed to the increased electrification of railroads. The Soviet Union is far ahead of the United States in rail electrification. Indeed, *no* other country approaches the USSR in mileage of electrified lines or in the high degree of utilization of all the railroad-track length, an accomplishment helped by electrification.

In addition there is increased electrification of homes. While the connection of gas pipelines and the supply of gas stoves to many smaller communities continues, the emphasis in larger cities is toward electrified kitchens. The city of Novosibirsk, for example is shifting from gas to electricity. I was told that this is for environmental reasons – obviously electricity is cleaner and there is less fire hazard than with gas stoves. But I dare say another factor is the policy of conserving gas as much as possible for essential industrial uses and for export.

In discussing the relationship between U.S. and USSR electricity production – Soviet production is now, and has been for several years, about half that of U.S. output – Borisov

pointed out that in the USSR, systematic use is made of the excess heat involved in electricity production. Even in the most efficient plants – in the USSR, USA or anywhere else – only about 40 percent of the total heat released by burning of fuel in electric power plants is converted into electricity. In the USSR a large part of the remaining 60 percent is used to heat apartment houses, industrial and administrative buildings. This is called co-generation.

According to Borisov, in 1975 Soviet electricity output was 1,039 billion kwh, roughly half the U.S. total. The heat used additionally had a calorific value equivalent to another 740 billion kwh. Since there is very little use of excess power plant heat in the United States, the effective difference between the two countries, therefore, is not so great.

President Carter has called for the co-generation of electricity and heat as a means of conserving energy, However, it is very difficult to introduce that in the U.S. economy. It will be done only if the various companies involved find it profitable. Then, it is not so easy to find efficient ways of grafting joint power-heat systems onto existing structures.

In December 1977 it was widely reported that the largest co-generator of heat and electricity in the United States, Consolidated Edison Company's centralized steam supply system in Manhattan (New York City), was in danger of being shut down because building owners find it less costly to install boilers and to buy fuel oil than to buy their steam from the utility company. The irony of this development was noted, confounding the President's call for co-generation in order to economize on energy.

But in the USSR this procedure was accomplished according to plan, in the initial stages of construction (or reconstruction and expansion) of cities and industrial areas. In the USA, few new cities are built, and when they are it is without a central plan. Centralized heating is impractical in the wide suburban sprawls that characterize much of the U.S. residential pattern. And in cities, there is the economic obstacle of writing off existing heating systems and the technical difficulty of transporting heat long distances from power plants to residential-commercial centers.

It does seem to me that the increase in electricity output in the USSR has been slower than hoped for. That is particularly true of 1977, when output increased by only 3.5 percent, the lowest annual rate of increase in the Soviet Union's peacetime history. In part, the slowdown was compensated by the increased effectiveness of the distribution system via the ever-widening net of high tension transmission lines. However, such small increases as that registered in 1977 would seem to be a brake on the economy.

A partial explanation could be the drop in the production of hydropower which, in general, fluctuates in the USSR, as it does in the USA, with changes in the water flow in rivers with hydroelectric power stations. There were sharp drops in Soviet hydropower production in the drought years of 1972 and 1975.

A more long-term factor was explained to me by Mikhail Shakhmatov, economic advisor at the Soviet Embassy in Washington, D.C. He said that there is much new capacity in Siberia that stands idle because the construction of new industrial installations to use it has not been completed. In confirmation of this, Soviet statistics show that between 1970 and 1975 the *capacity* of Soviet hydroelectric plants increased 29 percent, while *production* of hydropower rose only 1 percent. Shakhmatov predicted that there will be a sharp increase in electric power production – perhaps as much as 10 percent a year for some years – when industrial plants in Siberia and the BAM railroad are completed. Also, superhigh tension nets making Siberian electricity available to European Russia will permit an acceleration of production.

Another factor is that in recent years production and installation of generating equipment have been increasing slowly. The 1977 Plan was underfulfilled by 16 percent in the production of turbines and 10 percent of generators. Even more serious has been the failure to get all of the pieces of equipment to power plant sites on schedule, resulting in a lag in installations.

Thus, in 1977, generators with rated capacity of 18.9 million kilowatts were produced. Normally, according to the director of planning at Electrosila, the largest Soviet generator plant, about one-fourth of output is exported. That would have left 14 million kw for domestic use; but only 10 million kw were installed.

The Tenth Five-Year Plan calls for commissioning power plants with capacity rated at 67-70 million kw, as compared

with 58.1 million kw in the previous five years and 54.6 million kw in 1966-70. However, in the years 1976-77, only 21.9 million kw of capacity were commissioned, which at a five-year rate would be 54,8 million kw, about the same as the 1966-70 period. Installations will have to average 15-16 million kw per year during 1978-80 to catch up to the current goal. (Data from *Pravda*, January 28, 1978; *SSSR v Tsifrakh*, 1976, pp. 101-103; *Guidelines for the Development of the National Economy of the USSR*, 1976-80, release, p. 19.)

SURGUT POWER STATION

The first electric power station we visited was at Surgut. With 6 turbine-generator sets of 210,000-220,000 kw each, it had a total capacity of 1.284,000 kw at the time of our visit, but was still expanding. By 1980, it is scheduled to have approximately double that capacity, to become the largest power plant in Western Siberia.

The cost of production was only 0.468 kopecks per kwh. However, the price of natural gas (a by-product of the nearby oil wells) was raised from 11 rubles per 1,000 cubic meters to 23 rubles per 1,000 cubic meters at the start of 1977, in keeping with increases in the world price of natural gas. This increased price was the equivalent of 87c per cubic foot, and would raise the cost of production, all other things remaining equal, to 0.784 kopecks per kwh, still highly economical.

We were impressed with the cleanliness of the plant. The director, Vasily Golikov, pointed out that there was no problem with pollution, no waste product. He said they have been successful in keeping fish out of the water intake, and that they have built a reservoir, at a cost of a million rubles, where fish eggs are bred and hatched, for a production of 600 tons of carp per year.

Unlike the situation in the United States, builders of the Surgut power station are enjoying cost *deflation*. The first six blocks cost an average of 228 rubles per kw of capacity, while the next six will cost 118 rubles per kw. I suppose this reduction is due to the improvement of transportation facilities to Surgut, the creation of a local base for production of building materials, and the effect of experience

gained by construction workers on the site. Even so, Golikov said, these are the highest costs in the USSR. (By contrast, costs of new power plants in the United States are now running at $600 per kw. and often as much as $1,000 per kw or more.)

Golikov came to Surgut in 1971 to run a small preparatory thermal power plant of 24,000 kw, and he stayed with the enterprise as it was built up: the first main block was put into production in 1972. He is an electrical engineer, previously chief of a shop at a large thermal power station at Verkhny Tagil. His salary, including bonuses, is 800 rubles per month, roughly double the average wage of workers at the plant.

The bulk of the plant's power output is consumed by the burgeoning oil industry, with its huge requirements of power for drilling, pumping, separating, and various auxiliary operations. Electricity for residential consumption is supplied at a price of only 2 kopecks per kwh.

Of roughly 1,400 workers, 220 are members of the Communist Party. Valery Goryaistov, Secteraty of the Party Committee, was chief dispatcher at the plant before being elected to the Party post in 1976. There are 9 shop Party bureaus, and their work is varied. The Party members strive to stimulate production, engage in ideological work and oversee social activities. Each October Party schools and economic schools are conducted. They are attended by 70 percent of the workers twice a week at evening classes. Also, in the shops, Party organizes weekly information sessions of 15-20 minutes. The Secretary is paid 70 percent of the Plant Director's salary, by the Surgut City Party Committee, establishing his independence of the plant management.

The trade union chairman, Pyotr Makin, is paid the same amount out of trade union funds. There are monthly union meetings in each shop, with the entire membership meeting together three or four times a year. About 15 people are elected yearly to the trade union committee. The committee members continue to work in the plant and do their union work after hours, except for the full-time chairman. About 80 percent of the workers attend union meetings, Makin said.

Makin gave me a copy of the 1976 collective agreement between the union and management. I tell about that in detail in Chapter IX.

SIBERIAN ELECTRICAL HEAVY MACHINE-BUILDING FACTORY

The first electrical machine-building factory we visited was in Novosibirsk, one of the plants set up after the Soviet Government decided, in 1951, to augment the old enterprises at Leningrad, Kharkov, etc., which were modernized. Completed in 1953, the Novosibirsk enterprise has 5,000 workers and produces about 50 million rubles worth of equipment which, if calculated in capitalist world prices would be about 125 million dollars.

The plant's capacity is about one-third that of Electrosila, the largest Soviet producer, in Leningrad, which we visited later. The Novosibirsk plant has its own design and engineering shop, with 500 employees. It cooperates with the larger engineering and design institute in Leningrad and it has received designs from Electrosila, but it claims that it uses completely original designs for some of its generators and electrical machines.

We were given an excellent roundup of the plant's work, and my questions were answered by the director, Albert Vandshev, his deputy for scientific work, Konstantin Maslennikov, and the Party Secretary and trade union chairman, Boris Lemekh and Vladimir Bekhterev.

The plant makes hydrogenerators of 30,000 to 300,000 kw capacity and turbogenerators of up to 500,000 kw capacity. It also makes squirrel-cage electric motors – with a capacity of 500 to 8,000 kw each – for use in pumps for pipelines and other installations. It is the only Soviet producer of such motors and of high frequency electrical machines for induction heating of metals.

Vandshev and Maslennikov expressed particular pride in their factory's successful original designs in the high quality of its work which is comparable, they claimed, to the best Western products, and in their success in overfulfilling the five-year plans. The plant has been awarded red banners and citations for good work, and in addition to workers awarded orders, they have one Hero of Socialist Labor, Taras Suk, who designed an important asynchronized electric motor.

The plant is still growing, and during the Tenth Five-Year Plan period it will complete its own experimental plant for testing large electric machines and turbogenerators. In this respect it is catching up to Electrosila and is implementing

national policy of attaching full-scale experimental-development production units to operating enterprises.

From the trade union and Party leaders I obtained much information about the workers and their conditions. Labor productivity has been increasing at the rate of 4.8 percent per year and wages at the rate of 4.1 percent per year. Since 1960, wages have approximately doubled. At the time of my visit, the average wage came to a little over 200 rubles per month, including bonuses and the Siberian premium, which is only 15 percent in Novosibirsk – not nearly so significant as the regional premiums paid in the Far North and other more difficult areas for working and living. There are about 600 Communist Party members. Women comprise 48 percent of the plant workers and 70 percent of those in the research institute, which is attached to the enterprise.

Workers can go to school to raise their qualifications. There is an associated technical secondary school, and the plant cooperates with the Novosibirsk Technological Institute. The enterprise provides housing, schools and nurseries, as well as a camp and rest home, 40 kilometers away, with capacity for 1,400 children during the summer. The plant also has its own health centers and polyclinics, and there are 27 doctors and a total medical staff of 51.

Existing child-care centers have capacity for 1,100 preschoolers, not quite enough to take care of all the children of workers. But when the new center is completed, for another 280 children, there will be extra places.

I asked Vandshev about his own background. Like many other Soviet managers, he started as a worker. Completing studies at a polytechnical institute in 1960, he went to work as a foreman at the plant he now directs. In 1971, he was sent to help set up a new plant, under contract, and from 1974-77 he was its director. Early in 1977, he was made director of the Novosibirsk heavy engineering plant, where he had started as a foreman 17 years earlier. His father is a worker in Alma Ata, and his wife is a candidate of science at Akademgorodok near Novosibirsk. His salary as director is 300 rubles, plus premiums and bonuses that raise the total to around 425 rubles.

Bekhterev told us something about the organization and functioning of the trade union. The directing body of the union is the trade union committee of 23, elected at bi-annual meetings. The collective agreement with management is drawn

up yearly, following membership meetings at which terms are discussed in great detail, down to special conditions of work and requirements of every occupation. The agreements clearly reflect the participation of rank and file workers in formulating the terms.

The annual contract is concluded in February. In the summer, the union and management discuss the progress in fulfilling the plant's plan. In November they review the fulfillment of the plan of the enterprise and the goals for the following year. The main goals of the plan are incorporated in the union-management collective agreement.

The union's work is carried out through 11 commissions of activists, with about 300 activists in all. There are commissions for organization, public catering, production, youth, housing, safety, wages, women, state insurance, children, and work control. The union has 35 shop units, and within that are trade union groups of from 7 to 25 members. All units are concerned with all aspects of life in the plant.

The second heavy electrical equipment plant we visited was the largest factory in Armenia, part of a trust which manufactures small generators, transformers, electric motors, and refrigerators. It has 12,500 workers, plus 1,400 in a research unit. With a yearly output valued at 139 million rubles, it is clearly a major enterprise. The trust has its own technical school, trade union school, sports complex, clinic and pharmacy, plus a department store that sells food as well as clothing. Among the benefits provided from profits are free barbershop and manicure services.

The work of the plant was explained to us by the secretary of the Party Committee, Vladimir Assaryan.

Data on the plant bulletin board indicated that this plant was far below average in the percentage of high quality products turned out and in the extent to which work was carried out in a steady, rhythmic way. This is discussed in more detail in Chapter XI, Problems of the Soviet Economy.

ELECTROSILA

The third, the largest, and the most interesting of the plants that we visited for manufacturing turbogenerators for electric power plants was Electrosila, in Leningrad. This enterprise accounts for 60 percent of the capacity of generators produced in the Soviet Union. In 1960 I had visited Electrosila's sister plant in Leningrad, which manufactures turbines. Often turbines from the Metallist factory will be joined to Electrosila generators at the power plant site, but not necessarily: Electrosila generators may be matched with turbines made in Kharkov or elsewhere, while Metallist turbines may be matched with generators made at Novosibirsk or elsewhere.

Electrosila is an "obyedineniye"—roughly speaking, a trust. It has modernized a 75-year old plant and added several other plants in Leningrad, as well as subsidiaries in towns several hundred miles distant, and its own research institute, with 2,000 workers, including 60 candidates and doctors of science. The trust operates as a financial unit—with its own production plan, substantial capital investments, social facilities for workers, etc.—and with a comprehensive division of labor and integration of final products among the various plants.

Along with the other generator and turbine plants, it is under the general supervision of Mintyazhmash (electrical heavy engineering), a corporate-like structure that is part of the Ministry of Electrotechnical Machinery. Mintyazhmash, for example, allocates foreign trade orders among different production trusts and plants.

The building we went through – the largest of the Electrosila complex—makes the generator rotors, the central cores of the generators. This must be a high precision product, with exactly centered balance, to permit 3,000 revolutions per minute without significant vibration or wobbling. The fixed stators (produced in another building) that surround the rotors have magnetic poles which, in conjunction with the rapidly revolving rotors, generate electricity.

The rotor plant is clean and spacious. We saw rotors at various stages of production, and those units that were for nuclear power stations are about twice the diameter of generators for a fossil-fueled plant of equal capacity. That's because the steam produced by an atomic plant is at a lower pressure and temperature than at a fossil-fueled plant, and the turbine blades have to be correspondingly longer in order to get the full benefit of it. But on this account, they can only revolve at half the speed of the fossil-fueled plant turbines, lest the speed of revolution at the outside end of the blades be too fast for stability.

Victor Khalansky, deputy director general of Electrosila

in charge of economics and planning, was our host and guide. He gave us much information about the trust's economic and technical progress.

Over the five-year period 1971-75, productivity of labor and production increased 35 percent, and profits doubled. Profits amount to 15-16 percent of costs, and 10-11 percent of productive capital. During the 1976-80 Five-Year Plan period, production and productivity are scheduled to increase by a little more than 30 percent, or close to 6 percent per year. The fact that production and productivity increase at the same percentage means that all of the increase in production is achieved without any increase in the labor force. It has to be: the trust isn't authorized to increase its labor force. The northwestern region of the country generally has a slow population growth and a relatively stagnant total labor supply. The net increases in available labor are required for new enterprises and expanding service industries. Furthermore, Leningraders are especially conscious of their revolutionary traditions, and the youth are prominent among those who volunteer for the BAM railroad and other far-off projects.

As is true everywhere, there were photos and tributes to outstanding workers at Electrosila. However, reflecting the heroic traditions, there were special honors to workers who were veterans of the defense of the city in World War II during the siege of Leningrad.

Also honored was Stepan Birchenko, who had organized the first "buddy" group of young workers, a procedure whereby skilled workers not only teach novices but also seek to imbue them with a Communist attitude towards work. Now some 700 skilled, experienced workers are engaged in this activity, which has obvious importance in getting young workers to give their best.

At another plant we visited, the union contract provided for small payments to the workers who engaged in training apprentices in skilled trades.

In outlining the scope of his work as director of economics and planning, Khalansky described the participation of the labor collective in working up the economic and social plan of the enterprise. All workers are kept informed of events in the plants through their own newspaper, which comes out three times a week. And they all know that improvement in their living conditions is tied to productivity of labor.

I was able to look through several issues of the plant paper, but not to take any copies with me. Plant newspapers – most enterprises issue them – are not permitted to circulate out of the country. I don't know why this is so, but I do not think it is due to a higher degree of secrecy in the Soviet Union than, say, in the United States. I would consider more reasonable another explanation: because the workers of Soviet factories are regarded as collective owners, they have access to detailed operating information which, in a comparable U.S. plant, would be available only to the top officials and directors of a corporation, information kept from the workers on the grounds of "management prerogatives". So, as U.S. companies carefully examine all published material to guard their business secrets and proprietary processes, so must Soviet enterprises use discretion in dealing with the outside world. The alternative would be to exercise censorship over the workers' plant newspapers, and that would defeat their purpose.

Pravda, early in 1978, carried the report of the socialist obligations taken by the collective of Electrosila for 1978. These included: undertaking to complete the annual plan by December 28; to produce additional electrical goods worth 1.5 million rubles; to exceed the plan for increasing labor productivity by 10 percent; to achieve the entire increase in production without additional workers; to save enough metal to build a turbogenerator and 12 large electric motors; etc.

Among the commitments was one made jointly with the collective of the Sayano-Shushenskaya hydropower plant: to get the first block into operation a month ahead of schedule. A number of obligations concerned development of new types of products, of which the most interesting was the commitment to complete the technical project for a turbogenerator of 300,000 kw using the principle of superconductivity. This, I assume, would be the cryogenic installation which interests Khalansky so much. (*Pravda*, January 11, 1978.)

Electrosila's high profits enabled the trust to engage in extensive capital investments, budgeted at 100 million rubles in 1977. And included are substantial investments for improving living conditions of the plant's workers: a new stadium and sports palace have been erected, and a new palace of culture is under construction.

Electrosila makes 2,000 different items, including, of

course, different models and sizes of the same general kind of product.

Its most important product is turbogenerators, which may account for as much as 50 percent of the total value of output. At one of its plants it makes small generators, with capacities of 60 000 and 100,000 kw. At the main plant, which we visited, they have been making the larger generators – 300,000 to 800,000 kw, and, more recently, 1,200,000 kw.

Electrosila also makes hydrogenerators of up to 500,000 kw, and it was working on the world's largest hydrogenerator, with a capacity of 640.000 kw. for the Sayano-Shushenskaya hydropower plant on the upper reaches of the Yenisei in Siberia. And the plant makes 200,000, 500,000 and 1,000,000 kw turbogenerators for nuclear power stations for the pressurized water reactors used in and exported by the Soviet Union. These are four-pole units, with 1,500 revolutions per minute.

The enterprise is now preparing for still more powerful atomic generators – official Soviet plans project the inauguration of production of 1.5 million kw reactors in this five-year-plan period – and Khalansky said that they will be able to produce 2 million kw units by 1980, if orders are received for units of that size.

In addition to power generators, Electrosila makes electric motors in a wide range of sizes, including unique high power motors for ice-breakers; devices for electromagnetic mixing of metal in arc steel melting furnaces; and various other kinds of industrial electrical equipment. It also makes scientific electrical equipment, elementary particle accelarators, and other electro-physical equipment for the research center at Serpukhov, as well as equipment for the nuclear research center at Dubna.

In accordance with Soviet policy since the 24th Party Congress in 1970, most heavy industry and armament factories are required to produce consumers goods. Electrosila's output of consumers goods increased 9 times during the 1971-75 period, and is scheduled to double again during the 1976-80 period. It makes vacuum cleaners, meat mincers, broilers, coffee grinders, etc. But it is no "Appliance Park" as is the huge General Electric consumers durable goods plant in Kentucky. Rather, production is scattered through special shops at the different plants of the trust, and I gather household appliances currently account for less than 10 percent of its gross output.

Khalansky claimed that this system has an advantage over setting up huge specialized factories, since Electrosila and other heavy industry combines already have the necessary equipment as well as the skilled engineering staffs to design the appliances. The trust produces 200 different consumers goods items, of which all but two are profitable.

Of course the Soviet Union does have large specialized factories for the manufacture of automobiles, radios, television sets, refrigerators and other consumers goods. But with the tremendous competition for available capital, one can appreciate the difficulty of finding funds to build special factories to fill the growing demand for the variety of lesser household appliances which have become accessible to a substantial proportion of the population in some capitalist countries, and which the Soviet people also want. Thus the use of available equipment – perhaps machine tools that have already been replaced by more modern equipment – and materials such as plastics and metals that are used in its primary production helps increasingly to satisfy consumer demand now, before the eventual, but inevitable, erection of specialized factories.

It is even possible that, at some later stage of economic development, Electrosila will concentrate much of its output of lesser consumers appliances at some central point – a Soviet version of GE's Appliance Park – and be able then to multiply the output of these items.

And, in addition to all heretofore listed final products, Electrosila has a ferrous foundry and a non-ferrous foundry to make castings for its products.

Electosila officials are very proud of the stream of new products and processes developed by their research institute, and of the exacting quality standards they achieve. New products each year account for about 30 percent of total output. That suggests a rate of change and improvement matched by very few enterprises, mainly limited to the chemical industry. Khalansky told me that the economic results of new products amount to 25-30 million rubles – I assume this means an added net value produced.

Also important is product specialization. None of the 2,000 products is made at more than one plant of the trust. The savings from product specialization are estimated at 8 million rubles a year.

We visited the large special experimental development shop,

where new types of generators are built and tested. Khalansky called one partly completed generator to our attention. "We're building this one just to try out a new system of winding. Its cost is 600,000 rubles, but it's necessary even if it does not prove advantageous." This shop is consistent with the policy of improving the connection between research and development in order to reduce the time lag between research breakthroughs and their practical application, which has generally been longer in the USSR than in the United States.

On a stand in the experimental shop was a large generator which was undergoing tests. The operation was governed by a British-made third-generation ICI Corporation computer for remote control. The automatic recording and control equipment, of which the computer is the core, receives signals from almost 1,500 sensors, which analyze the temperature of the windings, mechanical stresses, vibrations, currents, and many other parameters.

I got the impression that the Electrosila people regard their generators as good as, and perhaps better than, any produced anywhere in the world. All of the generators earn the quality mark – which means that they are up to the most advanced world standards.

This, by the way, is a characteristic given much stress in the Soviet Union at the present time – the Tenth Five-Year Plan is called the Plan of Quality and Efficiency. Apparently some of the trust's other products are not up to this exacting standard, because only 65 percent of its total production has the quality mark. This in turn is several times higher than the percentage for all Soviet industry.

The cooling system is a key factor in any generator. Since the 1960s, large Electrosila generators use hydrogen cooling of the rotor core, and water cooling of the rotor and stator windings. Formerly the windings were also cooled with hydrogen. B. Fomin, Electrosila's general director, writes:

"In 1975, Electrosila manufactured the first 1,200 megawatt turbogenerator (3,000 rpm). Its rotor diameter is only five percent more and its length eight percent more than those of the 200 mw generator. Water cooling of the stator and rotor windings, replacing hydrogen cooling, has made this sharp increase in the output-weight ratio possible." (*Soviet Export*, No 2, 1977.)

Similary the weight of hydrogenerators per kw of power

nas been reduced 40 percent to 65 percent through this method of cooling.

The importance of this is evident when one considers that a large generator weighs as much as 500-600 tons. The limits of a generator's capacity are currently imposed by the limits of the weight of units that can be transported, even when the rotor and the stator are moved separately.

Fomin claims that the stator winding temperature of an 800,000 kw generator, under peak loading, is only 35 degrees Centigrade above the ambient temperature.

Without the need to separate windings for cooling, generators could be much smaller and lighter. Electrosila's research laboratory has developed experimental generators with cryogenic cooling – that is, with gases near absolute zero. Khalansky thinks that, with the aid of cryogenic cooling, it will be possible by the end of the century to make generators with a capacity of 4 to 6 million kw. In that event, he thinks, the effective production capacity of the Electrosila trust will be doubled.

Similar experimental work is going on in the United States.

There is ongoing research and considerable debate among power engineers over cooling systems. The heavy machinery factory at Novosibirsk, which specializes in hydrogenerators and medium-sized steam turbogenerators, uses oil as a coolant in the stator windings of some of its generators. Albert Vandshev, the director of the plant, claims that this is a more efficient coolant than water.

Khalansky disagrees, arguing that the oil creates a fire hazard, and that the added weight of the necessary protective insulation more than offsets the increased cooling efficiency of the oil. The system used by Electrosila on its large generators is the same as that used by General Electric.

Khalansky is especially interested in MHD – magnetic-hydrodynamic – generators, which are now in the early development stage.

In this process, a gas is heated to several thousand degrees and becomes a plasma; that is, the electrons are freed from the atoms. This plasma, under pressure, is shot in a jet stream through a generator chamber. A superpowerful magnet induces electricity in the plasma, which is collected by poles on the walls of the chamber. The need for rapidly rotating turbines and generators is climinated.

The principal advantage is the efficiency in translating heat energy into electrical energy. In conventional turbo-generator sets the maximum obtainable conversion of the heat energy used to make the steam is 40 percent. In the MHD generators, 60 percent can be converted. That is, 50 percent more electricity can be obtained from the same quantity of coal, or oil, or other fuel used in the power plant.

Khalansky expects that the Soviet Union, which leads in development of MHD generators, will build a unit with a capacity of 100,000 kw fairly soon. He believes that it will become the main form of intermediate generators, the bridge between the present fossil and nuclear fueled generators and the successful development of fusion or solar electric power.

There is a significant degree of collaboration between the United States and the Soviet Union in the development of MHD generators. While we were in Moscow the press announced the arrival of a huge magnet from the Argonne Laboratories near Chicago for use in experiments with the 20,400 kw experimental U-25 MHD pilot installation at the Institute of High Temperatures of the USSR Academy of Sciences. Previously Soviet electrode materials were tried out on an American coal-fueled MHD installation. Now, cooperation is to be extended as development of more advanced MHD generators goes forward in both countries.

This collaboration encourages friendly relationships among various sections of both peoples. A recent issue of the *Teamster*, monthly publication of the U.S. Teamsters Union, featured an article by two members who had been selected as the most experienced, capable drivers in the district. They were chosen to drive the 60-ton super-conducting magnet from the Argonne Laboratory to O'Hare Airport, and then to load it into the cargo compartment of an Air Force plane. They then rode with the magnet across the ocean and drove it from Moscow's Sheremetyevo Airport to the Soviet Institute.

The men took pride in being selected for this task and in their careful maneuvering, which was necessary in loading and unloading the heavy, but delicate, cargo.

INTERNATIONAL COOPERATION

We saw various foreign equipment in the Soviet electrical equipment factories, as at other Soviet enterprises. Soviet

cooperation and trade with capitalist countries in electrical equipment has always been as intensive as political conditions permitted.

In response to my question about prospects of U.S.-Soviet long-range cooperation in electricity, Deputy Minister Borisov answered:

"No country can develop alone; international division of labor becomes a necessity. It is working successfully among socialist countries (CMEA.–*V.P.*), including on nuclear energy. All are involved in manufacturing parts.

"I think such cooperation between the United States and the USSR could only be beneficial. It also improves the political climate to have economic and scientific relations, but the economic climate also depends on the political climate. Cooperation is our official position."

At Novosibirsk, director Vandshev told me of Soviet cooperation with Kraftwerke-Unie (FRG), Brown-Boveri (Switzerland), General Electric (USA), Hitachi (Japan), Parsons (USA), and Allegemeine Elektricitaets Gesellschaft (AEG–Telefunken, FRG).

The Soviet electrical equipment industry is an active exporter, largely, but not exclusively, to developing and socialist countries. Soviet cooperation in building the Aswan High Dam and in installing hydroelectric turbines and generators there had a major effect on Egypt's economy.

At Electrosila, Khalansky told of supplying the hydrogenerators for Aswan, as well as for hydropower plants in India, Canada, Brazil and Argentina.

He also mentioned selling four 200,000 kw generators to China in 1975 and 1976. Chinese specialists visited Electrosila to learn about the working of the generators, and Soviet specialists were in China to explain their operations. He said that Soviet engineers have very warm relations with their Chinese counterparts.

In a way, this is another example–one of many I came across–of constructive, normal relations between technical, scientific and business people of different countries, even where there are serious differences on the governmental level. But I considered this instance of Sino-Soviet cooperation particularly notable in view of the strident anti-Sovietism of the Chinese leadership and its past history of breaking off relations with Soviet personnel on almost every level.

Khalansky gave special emphasis to the cooperation of

specialists from Electrosila and Metallist in constructing the heavy electrical equipment plant at Hardwar, India, and in training thousands of Indian workers to run it. Today, he said, Indian experts can design their own equipment. Six or seven years ago, 90 percent of Indian production was with USSR-designed equipment, now only 3-4 percent.

At Novosibirsk, Vandshev reported shipment of generators to Syria, China and Romania, and of high-frequency AC electric motors to England, Sweden, Japan, France, Finland, Italy, and the CMEA countries–altogether to a total of 52 countries.

He also told us that there was an agreement between General Electric and the appropriate Soviet ministry. Early meetings with GE personnel, in 1973, included formal introductions and sight-seeing. He went on: "Together with the design institute in Leningrad, we cooperate with General Electric, and our designers have exchanged visits. Craig and Hawley, the chief designers of General Electric, were here in 1974 and are interested in the water cooling system we use in certain of our rotors. In a meeting with General Electric in 1976, we exchanged information about what we want from each other. At the next meeting we will discuss how much of the data can be supplied by each side."

GE-SCHENECTADY

Relations between the Soviet trade organizations and General Electric date back to the 1930s, when GE turbines were installed in the Dnieper hydroelectric plant. The Soviet people took special pride in that enterprise, considering it the symbol of their entry into the era of large-scale, modern industry.

Because of this history, and because of the extent of my interest in the Soviet electric power industry, I was anxious to visit General Electric's main heavy electrical equipment plant at Schenectady to compare notes.

The U.S. corporation responded favorably to my request, and a very fruitful visit resulted. We were hosted by Charles Elston, a 40-year veteran GE engineer, and an important official in the company's turbine department. Elston was selected to receive us because of his participation in GE's contacts with the Soviet Union since 1970 when his company and the USSR resumed cooperation.

Elston told us that in addition to its work on the Dnieper plant, GE had helped to design the Kharkov turbogenerator plant in the 1930s.

The Soviet Union wanted to further relationships immediately after World War II; it wanted to buy 300 to 400 steam turbines. The Soviets and GE worked together on the design; but the cold war intervened, and the U.S. Govenrment prohibited virtually all trade with the Soviet Union.

However, Soviet designers and engineers persisted, and they succeeded in building the dual-purpose installations, which are now being widely used. Through them, in the new cities that spring up, heat is not wasted–as I have previously described in explaining co-generation.

I told Elston of Foreign Trade Deputy Minister Borisov's claim that through co-generation, the USSR makes up a large part of its lag behind the USA in production of electricity. Elston said:

"Borisov is right. In a planned economy it is possible to do this. But in the United States, with its suburban sprawl and freedom of each individual to choose his own heating system, it wouldn't work."

Even before 1970, with the indications of a thaw in relations, GE set up an office in Geneva to explore contactswith the Soviet Union. The Soviet Minister of Electro-Technical Industry A. Antonov, came to the United States in 1970, and the following year a GE delegation visited the USSR. Since then there have been several symposia to exchange general technical information.

In 1975 Nikitin, the Soviet Deputy Minister of Electrical Engineering, said: "Let's get down to business." Following an exchange of experts, each side identificd areas of mutual interest and, as a result, GE is now in the process of negotiating the sale of certain licenses to the Soviet Union. However, while recognizing their merits, GE cannot fit any Soviet processes into its plants.

Elston's appraisal of the general level of Soviet research and development may be relevant to this question. He said: "Their basic research is at a very high level, but their technical application is not so effective. They try everything, whereas GE concentrates in areas dictated by our customers."

Soviet specialists agree that their basic research is as good as or better than that in the United States, while technological application lags behind the U.S. standard.

GE has a joint project with a Leningrad institute to develop cryorgenic cooling systems for generators. There's also cooperation in gas turbines, medical equipment, lamps. GE has sold hundreds of millions of dollars worth of gas turbines to the USSR to power pumps in the compressor stations along the great pipelines that ship Soviet gas from the Urals and Siberia westward.

Of course, American workers, and to some extent their companies, are losing because of the renewed U.S. cold war against trade with the USSR. Originally, the gas turbines were made in the United States for shipment to the USSR. Now, except for some very technical parts, they are made by West European licenses – AEG in West Germany (GE owns 11.5 percent of AEG) and Nuovo Pignone in Italy. Presumably GE makes less profit this way than by manufacturing the entire product in U.S. plants. And certainly U.S. workers would benefit if their employer company had more work.

According to Elston, General Electric's technical exchange with the Soviet Union is less extensive than with capitalist countries. Since the USSR is second only to the United States in the scale of its electrical engineering, and on a par in research and development, this lower level of cooperation must be considered a product of hostile political pressures which, obviously, are exerted from Washington. It should be equally obvious that the interests of both countries would be served by a higher level of cooperation.

Elston took us through a substantial portion of the huge turbine and generator plant. With the aid of satellite plants in South Carolina and New Hampshire, GE can produce generators with a capacity of 20 million kw per year, about half the total U.S. productive capacity, and about equal to the then total capacity of the Soviet Union.

The plant was built in 1950, replacing the old GE turbine and generator works with an effective, up-to-date layout and specialized equipment. There are 3,000-3,500 workers, with another 1,000 or so in the two satellite plants. Allowing for differences in the product mix, it is clear that labor productivity at Schenectady is higher than that in the main Soviet plants.

Elston pointed out certain advantages that General Electric had over Electrosila: GE makes turbines and generators in the same shop, facilitating coordination of design and scheduling. In the Soviet Union they are made in different enterprises under different management.

GE has a unique special machine for winding the coils that are inserted in the rotors of the generators. This eliminates the most time consuming and highly skilled hand operation. The Soviet Union lacks such a machine.

Much of GE's machining is done by huge, multi-operation, special purpose machine tools – some costing as much as $5 million each. For the most part, these machines are made to GE specifications by FRG machine-tool companies – in some of which GE has investments – and they have GE-made computerized numerical controls.

Amongst the foreign equipment in the Schenectady plant I noticed a large machine tool manufactured by Skoda, the Czechoslovak firm. This is an item which has been purchased by quite a few U.S. companies.

In Soviet plants, Elston says, machining is done mainly by general purpose machine tools, which is slower and increases the requirements for hand labor. However, not all processes are automated even at GE. For example, huge numbers of slotted metal separators have to be inserted in each rotor – perhaps a million, said Elston – and nobody has yet devised a way of doing it except by hand.

Space was more intensely utilized at Schenectady than at Leningrad. One had a feeling of crowding in the U.S. plant, but not at the Soviet plant. However, Elston claimed that his plant has a more efficient flow of work, through a better in-plant transportation system, better scheduling, coordination of component arrivals, etc.

The pace of work was similar, it seemed to me. In neither plant did workers appear to be under pressure: work was going on, but some workers were standing around, taking stock in preparation for the next process.

It is my opinion that the higher labor productivity at GE is due mainly to the more extensive availability of highly automated equipment, buttressed by the advantageous plant setup.

Elston claims that GE has a superior computerized system for following up equipment in the field, so that when a problem arises – even 10 or 15 years after installation – the company can alert other users and supply them with spare parts in advance of a possible breakdown. However, Soviet trade journals also claim availability of excellent servicing facili-

ties, especially on equipment exported to developing countries.

Apparently generators can be damaged when accidents of any kind cause sudden power cutoffs. From Elston's comments, I had the impression that it is not unusual for the average generator to be knocked out, at least temporarily, as often as once a year. Usually repairs can be made locally. But we saw one large generator, a substantial part of which had been returned to General Electric for major repairs and rebuilding.

According to Electrosila's general director Fomin, his company's large turbogenerators are built for long-term operation with a 10 percent active power overload, and are protected against breakdowns from short-circuiting by a special transverse damper system.

Some of the advantages in technical efficiency of the GE plant are offset by social inefficiency. Elston pointed out to me a completed turbine and generator set occupying floor space because the utility for which it was made had postponed acceptance of delivery for perhaps two years. The slow-down in growth of electric power consumption in the United States, environmental disputes, and intensified competition from Japanese and West European manufacturers on world markets have resulted in a scarcity of new orders and a wave of cancellations of old orders afflicting U.S. makers of heavy electrical equipment. This has not yet led to an actual recession in the industry, but for the first time in many years, this is a serious threat.

Elston claimed that safety provisions at GE are of a high standard. He is particularly proud of GE's lighting system, which he says has been improved twice since the plant was built. He claimed that in Soviet plants, enforcement of rules requiring wearing of safety glasses is slack. However, I saw many workers on the GE floor who did not appear to be wearing safety glasses. I'm not qualified to discuss his specific points, but in this as in other industries, Soviet workers have certain systematic advantages in health and safety measures, which are discussed in another chapter.

The GE industrial complex at Schenectady does have a very substantial medical establishment:

"Located essentially at the geographic center of the complex, the company has a modern hospital called the 'Industrial Clinic' which has 5 full-time doctors, 15 nurses, 5 medical technicians, supported by clerical, reception, records, and

cleaning personnel. There are 3 satellite dispensaries, one of which is located in the turbine factory building.

There are 2 ambulances, 2 X-ray rooms, dispensaries, emergency wards, a fracture room, an eye room, and various other facilities. The Industrial Clinic ordinarily provides day care only; patients requiring extended care are transferred to community hospitals." (Letter from Charles W. Elston to author, 3/15/78.)

This setup seems to me to be equivalent to corresponding on-site Soviet industrial medical facilities but, of course, without the supporting resort-sanatoriums associated with major Soviet enterprises.

Elston expressed admiration for certain features of Soviet life he had observed while on GE delegations. One was the common observation of many visitors, that his wife could walk the streets of Moscow at any hour and feel safe from attack. Another was his observation, from the TV tower restaurant, that Moscow was virtually surrounded by hothouses to supply the city with fresh produce. And finally, he liked the palaces of culture which Soviet workers had.

I asked what facilities General Electric had in that regard. He replied that there had been some in the past, but the company has phased them out. For example, the company had operated a golf course, available to its workers, but had sold it to a private country club. It had even franchised its in-plant canteens to an outside firm.

Elston's explanation for the sale of the golf course was interesting. Previously, apparently, it had been provided under agreement with the trade union recognized in the Schenectady plant, the International Union of Electrical Workers (IUE). But at one negotiation, the union had preferred additional cash compensation, since not enough workers used the golf course to justify all the workers foregoing additional income.

The basic problem here, it seems to me, is not GE's callousness or indifference to its workers. It is rather the atomization of people's social life in American capitalist society, which leaves each individual on his own to "sink or swim," and increasingly deprives the working population of any sense of community. To Elston, this is the freedom of choice of the individual in a free enterprise system. But to many this appears not as freedom, but as alienation and deprivation of a vital human need.

To many in the Soviet Union, the social advantage expressed, among other ways, by the palaces of culture with their varied opportunities for cultural, athletic and social activities is one of the outstanding positive features of the socialist way of life.

And there is another feature at almost every plant we visited in the Soviet Union, I was given statistics on the number of nationalities of the Soviet Union that were represented in the work force. But going through the large GE plant, we saw no Black workers among the hundreds we did see. Of course, we did not see the whole plant, and probably there are some Blacks employed at Schenectady. But certainly not many.

Again, unlike the situation in Soviet plants, the only women we saw were in the offices.

Discrimination in employment remains an evil at General Electric, as in most U.S. corporations. Recently a tentative agreement was reached between GE and the Equal Employment Opportunity Commission whereby the company will pay $29 million as part of a program to correct its past discrimination. But, according to an account in the *Wall Street Journal*, the 12 unions that represent GE workers considered the proposed settlement to be inadequate. (*Wall Street Journal*, June 9, 1978.)

One incident highlights the still tenuous nature of Soviet-U.S. relations in industrial matters, the contradiction in U.S. business and government policies which hampers development of cooperation. Elston told me he had shown Soviet engineers and officials through the same plant we were visiting. When he pointed out the automatic winding machine, I asked whether the Soviet delegation had expressed an interest in purchasing a license for it. He affirmed that they had, but doubted that the U.S. Commerce Department would grant a license for it. Later, in his office, he contradicted himself. While he did not say so, I had the impression that General Electric itself might not want to license it to a Soviet firm, although it has sold the license to other countries.

Whatever the reason, whether because of commercial rivalry or political bostility, U.S. policy strives to retain technical advantage over the Soviet Union by barring normal business transactions. Such methods may gain capitalism time in its losing economic contest with socialism, but I estimate that the amount of gain will dwindle as CMEA cooperation

accclerates the ability of the socialist countries not only to catch up to, but also to surprass, capitalist countries in more and more areas of science and technology.

Another incident illustrates how misleading stereotypes can be–in this case the designation of the United States as "open" and the Soviet Union as "closed" societies.

All factories, farms, drilling sites, we visited in the Soviet Union were completely open for photography, and this included experimental projects. Responding to my letter, Charles Elston called to invite me to the GE plant. I asked if my wife might come along to take notes and photographs.

"She may come, of course," he said, "but leave your camera home." And when we met him, he explained: "It's very embarrassing to us when we visit Soviet plants. They invite us to take all the pictures we want, but we have to avoid taking any, so as not to have to reciprocate when they come to our plant."

Chapter IV

NUCLEAR: "ENERGY OF THE CENTURY"

In the United States, there is continuing, often heated, debate about energy: how much electricity is needed, how it should be provided – with what fuels, centrally or locally, under what environmental conditions. Mass demonstrations are held "for solar power now"; against nuclear power plants. What were formerly regarded as technical engineering problems have become major political issues, involving leading political figures.

In the Soviet Union, there is no debate about the direction of electricity output – up, up, and still further up, in total and per capita, for as far ahead as economists and scientists can plan.

As in the United States, there is great interest and much discussion of types of energy. But there are none of the confrontational attitudes so common in the United States – such as posing solar against nuclear energy. There were some individuales who expressed concern about waste and radiation, but these advocated intensified efforts to develop more advanced safeguards and solutions; none we met opposed continued and accelerated use of nuclear power for peaceful purposes.

Atomic energy is looked upon as the most important advance in energy in this century, and nuclear power plants are destined to account for a considerable part of the growth in Soviet electricity capacity during the 1980s and 1990s. But there is no neglect of other sources of electricity, available currently or potentially for the future.

The general perspective for the development of electric power in the Soviet Union for the rest of this century projects:

– Priority growth of atomic power stations, virtually all in the European part of the USSR;

– Very rapid growth of coal-fueled electric power stations, especially using rich open-pit mines in Siberia; the early completion of super-high tension transmission lines to connect Siberian electricity with the all-European Soviet system that is already operative;

– Continued construction of hydropower plants.

Starting in the 1990s or early in the 21st century, the projection is:

– Main emphasis on fast neutron, "breeder" atomic power stations, which get 20-30 times as much out of each ton of uranium;

– Magnetic-hydrodynamic (MHD) generators for coal-fueled power stations, which get 50 percent more electricity per ton of coal.

And, for sometime in the future:

– Thermonuclear power (thermonuclear energy is released by the fusion of atomic particles at ultra-high temperatures; nuclear energy, by the splitting of nuclei at lower temperatures);

– Direct conversion of solar energy into electricity.

Let's look at some of these forms of power.

The most spectacular development of coal-fueled electric power is taking place in the Kansk-Achinsk basin in south-central Siberia. This area contains vast coal reserves, in thick seams close to the surface. Great open-pit mines are being opened up, the coal to be shipped directly to huge power stations, with 6,4 million kilowatts capacity each, which are being constructed. If implemented, this could add one-third of the 1977 capacity of all Soviet power plants.

Soviet law requires complete rehabilitation of all land despoiled by open-pit mining. While environmental controls are strict, there is none of the fierce environmentalist opposition such as has blocked the construction of huge coal-fueled power plants in the Rocky Mountain area of the United States.

Although industry is being rapidly developed in Siberia, there is no perspective that it will grow fast enough to absorb all of the increasing power output from Siberian hydropower and coal-fueled stations. The Soviet planners are firmly committed to ultra-high tension trasmission of a substantial part of the Siberian electricity to the European part of the USSR, which is relatively deficient in fuel resources.

Soviet health authorities, by the way, believe that the electrical fields created by these high-tension power lines have a negative effect on organisms. To avert possible damage, therefore, wide right-of-ways and high clearance are required, and access by people and animals to the area of the power lines

is limited. Clearly, however, Soviet authorities disagree with American environmentalists and farmers who strenuously oppose high-tension power lines.

An interesting sidelight is that recently the American Electric Power Corporation, the leading user of ultra-high tension transmission lines in the United States, sent a delegation to the Soviet Union to compare information on the effects of these lines. The U.S. company claims that studies show that in the 20 years their lines have been in operation, there have been no harmful effects.

The Soviet Union started operation of the first large fast breeder reactor at Shevchenko, on the Caspian Sea, in 1973. With a capacity of 350,000 kilowatts, it produces electricity and also powers a water desalination plant. A larger and differently designed 600,000 kilowatt breeder reactor is under construction at the Beloyarsk atomic power station in the Urals. Meanwhile still larger breeder plants are being designed, but clearly their general introduction into commercial production cannot be expected before the 1990s, at the earliest.

American-Soviet cooperation in the development of thermonuclear power is substantial. Because of advances in the last few years, some leading Soviet scientists predict production of thermonuclear power for peaceful purposes on a usable scale by the year 2000. However, even if this works out, it would be quite some time before a standard technology and large-scale production of the necessary equipment could be organized.

Well publicized Soviet experiments with solar energy, researches into tidal power, etc., go back at least a couple of decades. During our visit to the Electrification Ministry in Moscow, I asked Deputy Minister Borisov his opinion about the perspectives for solar energy. He said that some institutes are working on it but have not yet achieved any major results. It's an important factor for the future, he went on, but not for our generation.

At this point, S. G. Mktaryan, chief of the main planning-economic administration of the Ministry, interjected: "In the more distant future solar energy will become the main source of power.... The future power of the world depends on it."

Borisov noted that the USSR is cooperating with the United States in this field and that U.S. representatives were scheduled to participate in a seminar on solar energy to be held the following month in Ashkhabad. Ashkhabad is the capital of the Turkmenian SSR, a largely desert republic with physical conditions similar to the parts of Arizona and California where solar experiments are carried on.

Academician N. Semyonov, the brillant Nobel Prize chemist, foresees the need to discover some wholly new principle for converting solar energy if it is to be made economically feasible. He hypothecates a possible approach through photosynthesis of plants, which obviously could not be impelemented for a long time to come. (N. Semyonov, "Power Resources of the Future," in *Things to Come*, Mir Publishers. Moscow, 1977.)

Anatoly Alexandrov, President of the USSR Academy of Sciences, writes that solar, wind, tidal, and geothermal energy are advantageous as supplemental sources of energy, in limited areas of the country where natural conditions are favorable. However, he estimates that their combined use will not supply more than 1-2 percent of the country's energy requirements by the end of this century. (*Izvestia*, May 4, 1976.)

Recently, some Soviet publicity has been more optimistic about solar energy, wind energy, etc., but without contradicting the quantitative estimate of Alexandrov. His figures roughly agree with estimates of various academic and corporate specialists for the United States. However, in the United States there are also those who anticipate that solar, wind, biomass, and other so-called "soft" energy sources will account for a large part of total energy consumption by the end of this century, some claiming as much as 20 percent of the total or more. To some extent, these predictions are deceptive, because they include hydropower with solar. Even so, realistic appraisal of the stage of experimental development, and cost comparisons, make it clear that such "solar energy now" forecasts are unfounded propaganda claims. Nor can very liberal government subsidies for solar energy hot water installations and for such purposes as heating swimming pools, add more than one or two percentage points to the end of the century projection.

THE ATOMIC POWER BOOM

But for the next decade, and probably well beyond, the centerpiece of the Soviet electrification program will be the serial production and erection of large, standardized, slow-

neutron nuclear power stations. Many of these are pressurized water-cooled, water-moderated reactors, of the same general type as those manufactured by the Westinghouse Corporation, although developed completely independently by the Soviet Union. Others are channel-type reactors, using deuterium (heavy water) moderator, roughly similar to the CANDU reactors made in Canada. Soviet engineers have designed reactors with 1,500 megawatts capacity, larger than any now in use, using this system.

The first substantial Soviet commercial nuclear power reactor began producing in 1964, four years after its U.S. counterpart.

During the 1960s and early 1970s the U.S. nuclear power industry grew much rapidly than that of the Soviet Union, expanding about four times as large. However, by the 1980s the relative gap will narrow rather rapidly.

By 1975 the capacity of Soviet nuclear power plants was about 7 million kilowatts. By 1980 it will be more than double that, and during the 1980s the aim is to install atomic reactors at a rate of 10 million kilowatts per year.

However, recent writings indicate that the buildup of Soviet atomic power plant capacity has been slowed somewhat, in comparison with earlier plans, mainly because of the large investments and the complexity of problems that have to be dealt with in planning, constructing and installing atomic power plants. Still, the anticipated pace of nuclear energy growth is impressive. It compares with average actual additions to Soviet electric power capacity of all types of about 11 million kilowatts annually in recent years. At one time installations of atomic reactors in the United States were scheduled to reach 13 million kilowatts per year during the 1980s, but that has been drastically reduced because of a slackening in the pace of economic growth and the influence of opponents of nuclear power.

The key enterprise for considerably boosting Soviet atomic power installations is Atommash, the most publicized shock industrial construction project in the European part of the USSR. It's at the new city of Volgodonsk, at the western end of the Tsimlanskoye Sea, which was formed by construction of the Volga-Don Canal. This city is also the site of the Rostov atomic power station. Waterways link the complex to all major sections of the European part of the USSR, and

to overseas points. It is close to the metallurgical base of the Donbas area.

Atommash workers will make complete sets of equipment for atomic power stations – reactors, steam generators, heat exchangers, volume compensators, safety materials – for domestic use and for export. Only the turbine and generator sets will be made elsewhere. The projected capacity is 8 million kilowatts per year of reactors and associated equipment. The plant is being equipped with giant cranes, able to carry weights up to 1,200 tons, and with presses of unprecedented power.

The equipment in the vast plant is set up not by function, but in the order of the production process, to reduce the time lost in moving items from place to place (e.g., welding takes place in several locations, wherever required along the production line, instead of in one large central area). The same principle, on a more limited scale, is used in the General Electric turbine and generator plant in Schenectady. It saves a large amount of time, which would otherwise be required to move the ultra-heavy items of electrical equipment back and forth.

The weekly newspaper, *Ekonomicheskaya Gazeta*, has a control post in the Atommash plant. Its reporters continuously publicize all shortcomings, delays and inefficiencies, naming the responsible construction trusts and individual chiefs, stimulating corrective measures and, on occasion, reprimanding lagging officials. Much emphasis is given to promoting the brigade contract method, whereby groups of workers contract to complete a given task in a specified time, for an agreed payment.

As in the oil lands of Western Siberia, and on the BAM railroad, construction of the city and all of the living requirements of the construction workers and shop workers goes hand in hand with erection of the plant:

"The city of Volgodonsk is developing fast. In only several years its population has tripled. From all corners of the country come volunteers for this all-Union shock Komsomol construction. In addition, last year two and a half times more marriages and more than three times more births were registered than in 1973." (*Ekonomicheskaya Gazeta*, No. 3, January 1978.)

In July 1978, the 100,000th resident of Volgodonsk was born.

Dr. Klaus Fuchs, an anti-nazi exile in Britain, helped that country develop its nuclear energy program. Later, when the cold war intervened, he was accused, like the Rosenbergs in the United States, of "giving the secret of the atomic bomb" to the Soviet Union. Imprisoned for many years, he was finally released to the German Democratic Republic in a prisoner exchange. There, he has made major contributions to GDR and world science.

In Berlin, in May 1977, Dr. Fuchs explained to me something about the scale of CMEA collaboration in the field of atomic energy. Starting with basic scientific work at the Dubna center in the Soviet Union and other research institutions in the CMEA countries, it extends to improvement of reactor designs, to the division of labor in the production of components for nuclear power plants, and it coordinates plans for introducing such plants for 10-15 years ahead. It is on the basis of this pooling of efforts that the CMEA countries consider it possible to plan for 50 percent or more of the increase in their electric power capacity after 1980 to be through atomic power stations.

Two months after my conversation with Dr. Fuchs, the CMEA Executive Council elaborated a decision by all its members to cooperate intensively in priority development of atomic energy. They adopted a program for maximizing output of atomic machinery in the member countries through many-sided specialization and cooperation, with details to be agreed upon during 1978 to cover the period up to 1990. (*Ekonomicheskaya Gazeta*, No. 29, July 1977.)

In accordance with this division of labor, the GDR, for example, obtains reactors and much other equipment from the Soviet Union and, in its turn, is cooperating in the construction of Atommash, and is otherwise contributing research, design, engineering, and equipment to the combined CMEA program.

Fuchs told me that the relative shares of atomic vs. lignite-fueled electric power plants would depend on comparative costs and on the possibilities of increasing production of lignite, the major fuel resource of the GDR. During 1978 I have read and heard conflicting reports about this: the latest is that for the time being, lignite will have priority, based on new deposits and a higher cost of nuclear power. I have

not seen this confirmed in writing. However, later, according to this account, when breeder reactors are perfected, GDR's emphasis will shift to them.

Czechoslovakia appears to be going all out for nuclear energy – the famous Skoda amalgamation will be second only to Atommash as a supplier of nuclear energy equipment to socialist countries. It will produce 5 large atomic reactors per year, in addition to turbines for use in atomic power plants with capacities of 500,000 and a million kilowatts each. Czechoslovakia itself, which is still installing its first substantial nuclear reactors, aims to have a nuclear capacity of 30-35 million kilowatts by the end of the century. On a per capita basis, this is equivalent to about four-fifths of the *total* present electric power capacity of the United States! (*New Times*, No. 19, 1978.)

The reasons for this are not only economic, but environmental. At present Czechoslovakia is forced to rely increasingly on brown coal as an energy source. This causes serious environmental pollution in the densely populated region of Bohemia, nor is existing technology capable of completely neutralizing it. Large-scale development of atomic energy will ease this problem; as well as the increasing difficulty of getting at less accessible coal ore bodies. (Josef Korcak in *Information Bulletin*, No. 6, 1978, Central Committee of the Communist Party of Czechoslovakia.)

Within the Soviet Union, the decision for top priority development of atomic energy was made at the 25th Congress of the Communist Party of the Soviet Union in 1976. Academician A. Alexandrov, a member of the Central Committee of the Soviet Communist Party as well as President of the Academy of Sciences of the USSR, then wrote an authoritative article about perspectives for the development of atomic energy in *Izvestia*, under the headline: "Energy of the Century".

He explained that while the USSR is the only major industrial power self-sufficient in oil and gas, these fuels are limited in supply, so will increasingly be reserved for technological use – as in the petrochemical industry. The coal resources in Siberia are not conveniently located for much of the country, and the burning of coal has bad environmental consequences.

Hence, he said, there will be increasing emphasis on atomic power and hydropower, and, in view of the limited potential of hydropower, atomic energy will become predominant.

While at present there is a rapid buildup of slow neutron plants, in the long run, fast neutron breeder reactors will predominate.

During the Tenth Five-Year Plan period, wrote Alexandrov, a way must be found to create a competitive breeder reactor and to develop sufficient fuel reprocessing capacity to supply the necessary plutonium-uranium mixture. Thus the Soviet Union is strongly committed to a course still under debate in the United States. Another important decision made at the 25th Congress was to use atomic energy for heat as well as for electricity, and intensive work is going on to develop suitable atomic heat and power installations.

But that isn't all. Alexandrov pointed out that only 20 percent of energy is in the form of electricity. Further down the road, he sees the application of atomic energy for metallurgy, chemistry, and even for producing fluid and gaseous fuel for automotive transport. Special purpose nuclear-powered ships, such as the Soviet ice-breakers and West German and Japanese ore-carrying vessels, are already in use.

More cost-efficient nuclear-powered vessels have already been designed, and some Soviet specialists contend that they will come into widespread use in the not too distant future. In Japan a contract has been let for the use of a nuclear reactor to heat gas for the direct reduction of iron ore, and the subsequent transformation of pig iron into steel.

THE SAFETY ISSUE

Soviet scientists, engineers, nuclear industry personnel, and political leaders have no doubts on this score. They regard nuclear power plants, as constructed and operated in their country, as absolutely safe. They demonstrate that in normal operation their plants do not emit significant amounts of radiation, nor subject plant workers to harmful doses. They stress the environmental advantages of nuclear power plants which, unlike fossil-fueled plants, do not pollute the atmosphere nor add dangerously to carbon dioxide concentrations, which through the "greenhouse" effect could adversely affect the earth's climate.

There was a 10-year gap between the world's first commercial nuclear power plant – the 5,000 kilowatt plant at Obninsk and the first really sizeable Soviet reactor at Novovoronezh. Operations were studied very carefully, "bugs" eliminated, and safety measures improved before the country moved to large-scale expansion of atomic power in the 1970s.

The Soviets consider that the problem of atomic waste is solved in principle and are looking forward to improve methods of vitrification which will make it possible to use part of the waste in industry and medicine. In a notable interview, Andronik Petrosyants, Chairman of the USSR State Committee for the Utilization of Atomic Energy, said:

"First I wish to stress that if there was the slightest danger to the population, neither our country nor the other socialist countries would build such stations, however advantageous they might otherwise be. Yet our Tenth Five-Year Plan sets a priority rate on development of the atomic power industry in the European part of the USSR, the most densely populated section of the country.... You know very well how strict are the sanitary regulations laid down and enforced by the Ministry of Public Health. They are obligatory for all, and cover also the location and operation of nuclear installations. Besides there are additional rules on the use of nuclear energy....

"Strict control and double-checked safeguards are standard practice in our work.... You have seen for yourself how reactors are made, how they are put through their paces in laboratories, how each of their components is tested over and over again in hundreds of simulated emergency situations. Each operating reactor is provided with virtually unfailing (unfailing because of a three-four tier system of checks and double-checks) safeguards against accidents that ensure automatic instantaneous cooling if the temperature suddenly reaches the critical point."

He characterized talk of radiation danger to the population in general "to be as absurd as it is unscientific."

Soviet spokespersons sharply distinguish in this respect between the peaceful and military uses of nuclear energy. Petrosyants put it this way:

"I trust that my optimism will not be taken to mean that I underestimate the potential danger of the nuclear destruction of our civilization. But that is another problem entirely. The real danger emanates from the use of nuclear energy for military purposes.... But the materialization of detente, for which all progressive humanity is working, includes also the limitation of armaments, disarmament and effective control over both."

Soviet scientists deplore the anti-nuclear power movement in the West. They have contact with nuclear energy people, and exchange plant visits with the United States and other capitalist countries. Following his discussion of the strict rules on the use of nuclear energy in the Soviet Union, Petrosyants said:

"Similar rules and safeguards are observed in Britain, the U.S., France, West Germany, Japan and all other countries with a nuclear industry. And since the protection of the atmosphere, water and soil is a world-wide problem which cannot be resolved by national measures alone, radiation safety is supervised by the World Health Organization and the International Atomic Energy Agency." (*New Times*, No. 13, March 13, 1976.)

On our visit to the Ministry of Energetics and Electricity, I discussed safety questions with V. M. Voronin, chief engineer of Glavatomenergo, the Soviet atomic energy agency.

He said the approach of U.S. and Soviet engineers on emergency core cooling systems is similar. "We have not only double, but also triple reserve systems," he emphasized. He said a special scientific institute is working on the problem of deep burial of solidified and glassified high level waste: "We are confident the problem is going to be solved." In short, waste disposal is pretty much at the same stage as in the United States – with the principal methods of long-term disposal determined, but with a number of technical problems unresolved.

Later, I learned of one difference from U.S. procedure. At Novovoronezh, I was told that used fuel is kept there up to three years for cooling, and then taken in tanks for further processing. Up to now, in the United States, all waste is retained in tanks at the plant sites pending final decisions on reprocessing or burial. The American plant manager I talked to expressed the wish that the U.S. Government would provide a centralized storage place, but suggestions for that have been blocked by political-environmental disputes. Despite the technical similarity there is a great difference in safety between atomic plants under socialism and capitalism.

Many incidents, notably the severe accident in 1979, make it clear that corporate profit interests lead U.S. companies to skimp on safety control, to cut costs of equipment, etc.

Many progressive Americans have come to the conclusion that this technology has gone beyond what can be trusted to

private industry, and can only be made safe under a nationalized system, with effective control by workers, scientists, and people whose judgment is not distorted by considerations of profit.

The serious accident at the Three Mile Island plant near Harrisburg, Pennsylvania, was a dramatic example of shortcomings – apparently both in component manufacturing and plant operating control – as well as an indication of undue company haste in achieving commercial operations so as to increase profits.

Up to the time of that accident, the U.S. Nuclear Regulatory Commission had an insufficient number of inspectors for power plants, and it remains to be seen whether promises will be kept to hire enough staff and to place them permanently at each plant to tighten controls and eliminate violations.

Yet, over a period approaching two decades of commercial operations, the environmental, health and safety record of nuclear power plants has been outstandingly good. Even at Three Mile Island there were no injuries, only heavy financial damage. But it indicated that operating procedures were inexcusably careless, at least at that plant. It showed the need for tighter control over operations, stricter training of operating personnel, and more responsible management. The anti-nuclear movement, however, has the more far-reaching objective of outlawing the use of nuclear power.

Soviet leaders are concerned about the anti-nuclear movement in the West, essentially because it befuddles the distinction between nuclear bombs and nuclear power. Indeed, many influential anti-nuclear activists have been *stressing* what they consider the *identity* between the two, as on the bumper stickers on automobiles which state: There is No Peaceful Atom. Other, more politically aware opponents, strive to lead the movement into equal or primary opposition to nuclear weapons.

The Soviets believe that proliferation of nuclear weapons should be prevented by political means, including adherence of all states to the Non-Proliferation Treaty, and by International Atomic Energy Agency inspection and controls, without inhibiting the right of every country to develop atomic energy for peaceful purposes.

One of the arguments used by opponents of civilian nuclear power is that criminals can rip-off plutonium, or other

nuclear materials, from the power plants and manufactureterrorist weapons. In countering that argument. Vasily Yemelyanov, a Corresponding Member of the Academy of Sciences of the USSR, and an atomic scientist, wrote:

"At the 1966 symposium in Canada, I spoke about the possibility of nuclear weapons being stolen from NATO arsenals. One of my colleagues countered that this was out of the question because nuclear charges had electronic locks which thieves would not be able to open.

"So we are to assume that it is easier for criminals to make atomic bombs than to pick the locks of nuclear weapons stored in arsenals. Queer logic indeed – atomic power stations are dangerous, while the world's nuclear weapons arsenals aren't.

"It is worth remarking that this vociferous anti-atomic power station campaign sprang up as detente began to gather force. The opponents of detente and disarmament are doing all they can to distract public wrath from nuclear weapons and bring it down upon atomic power stations." (*Moscow News*, No. 39. October, 1976.)

However, writing two years later, Yemelyanov qualified his criticism of the anti-nuclear power movement by noting the "social problem": owners of stations who place "maximum profits" ahead of people might not take the necessary steps to ensure safety. (*International Affairs*, April 1978.)

The same point has been made much more forcefully in policy statement of the Canadian and U.S. Communist Parties. While stressing the safety of atomic power plants in socialist countries, Gus Hall writes:

"Corporations because of their drive for profits and because they are not concerned with human welfare cannot be trusted with the management of a technology that presents possible dangers to human beings.

"Therefore, the demand for people's watchdog safety committees is a just one. And of course an even more meaningful safeguard would be to nationalize the whole energy complex, including nuclear power. This would remove the obstacle of private profit from the energy field." (*Daily World Magazine*, August 6, 1977.)

Subsequent to the Three Mile Island accident, Hall went further and called for shutting down all nuclear power plants until their safety was verified by people's control committees. The strenuous opposition of U.S. corporations to environmental measures generally does call in question their claimed devotion to safety in nuclear energy matters. Despite the impressive fact, as pointed out by Sigvard Eklund, Directo -General of the IAEA in 1977, that "in over 1,400 reactor-years of commercial power reactor operation no accident leading to a radiation-related disability has occurred – a record that is unparalleled in any other modern large-scale industry." (*Bulletin of the Atomic Scientists*, October, 1977.)

Unfortunately, most of the opponents of nuclear power are opposed to the technology itself, and most leaders of this movement are opposed to economic growth and large-scale modern technology in general. Certainly, few of those who oppose nuclear power make a distinction between its use in socialist and capitalist countries, or recognize any social factor in possible dangers. In fact, much of the anti-nuclear power propaganda has an anti-Soviet edge. And anti-Soviet forces manipulate anti-nuclear power sentiment for their basic propaganda aim of discrediting socialism. Typical anti-nuclear power articles charge that Soviet nuclear power plants are "even more dangerous" than those in the West, and report alleged catastrophic accidents in the Soviet Union, which are vigorously denied by Soviet sources and by Western observers on the spot.

Such was the charge of an explosion at the breeder reactor at Shevchenko, a report exposed by a British editor who visited the plant, and by subsequent reports of its uninterrupted operation. (*New Scientist*, London, December 4, 1975.)

Beginning in November 1976 British and then U.S. publications sensationalized CIA materials about an alleged Soviet nuclear accident near Chelyabinsk, in the Urals, in which hundreds of people were supposedly killed by radiation from erupting nuclear discharges. The accident is supposed to have happened in 1957-58, that is, when, if there had been such an accident, it could only have been connected with the military program, and not with civilian reactors. The CIA claims it had information from informants soon after the alleged incident, but waited nearly two decades to publicize it, through Soviet emigres, in late 1976. Ralph Nader and the environmentalist organization, Friends of the Earth, eagerly picked up the tale.

One must ask why this story was "withheld" for nearly 20 years after the alleged event, until the start of an intense campaign against the policy of detente, and for an intensifi-

cation of the nuclear weapons race. Whether or not there was an accident in the Soviet military program, it should be borne in mind that the U.S. military nuclear weapon program also caused a number of fatalities of Americans, as well as vast damage to Japanese and to Pacific Islanders, notably in the rendering of Bikini atoll unliveable, the poisoning of fish, etc. Accidents in the pursuit of military weaponry really have no relation to the operation of civilian nuclear power plants.

NOVOVORONEZH

The train to Voronezh left the Kazan Station in the northern part of Moscow in the still-light evening hours. Leisurely it circled the city and, through the short June night and morning hours, meandered southward through the Russian countryside. Passengers got up from their compartment beds to stand in the corridor and look out of the windows until the train, after several stops arrived in Voronezh at 9 a.m. It was a comfortable, unhurried 500 kilometers in 12 hours.

We were met by Alexander Pribytko, a pleasant young man who handles the many delegations that visit the Novovoronezh atomic energy plant about 40 kilometers from the city. After a brief tour through downtown Voronezh, we were driven to the plant. Across the facade of the administration building is the slogan "Let the Atom be a Worker, not a Soldier". On the steps, we were met by the director. Fyodor Ovchinnikov, a big, friendly, and very well-informed man with a lively sense of humor.

For several hours we were briefed in the board room, which was lined with diagrams, charts and models. Patient answers were given to my many questions. Then, after dinner in the plant's canteen we toured all through the plant. We went through the turbine rooms and the control rooms with computerized panels reaching from floor to ceiling, with knobs, buttons and flashing lights; then on through the area where the piping system connected to the steam generators and where there was the special piping system for cooling the reactors. Finally, we visited one of the reactor buildings, and from a special glass-enclosed viewing platform, looked down at two reactors. We took photographs everywhere.

The whole enterprise is absolutely clean, spacious and well laid out. In even a well-kept fossil-fueled plant there

is a certain amount of grime associated with the coal or oil. That was absent here: except for some machinery lubricants, the only circulating substances are water and steam, well encased in superstrong pipes and vessels. Even so, the engineers aren't quite satisfied with the spatial arrangement. They say the turbine rooms should have been somewhat wider to permit most efficient maintenance. This will be corrected in the new building that will house the fifth unit.

The first reactor, which went into operation in 1964, had an electric power capacity of 210,000 kilowatts. The second, with a capacity of 365,000 kilowatts, dates from 1969; the third and fourth, of 440,000 kilowatts each, started in 1971 and 1972 respectively. And the fifth, a million kilowatt reactor, was scheduled to be completed in 1978, but was delayed owing to belated delivery of vital equipment.

Each of the units is more efficient than its predecessor. Electricity from the first reactor costs 1 kopeck per kilowatt hour; from the third and fourth, 0.65 kopecks; and from the fifth, the cost projected is 0.50 kopecks. All of these figures include amortization as well as fuel and operating costs. The fifth reactor core, which will generate five times the power of the first, will be only 50 percent larger and will have a higher percentage of conversion of heat energy into electricity.

Ovchinnikov claimed that electricity from Novovoronezh was already cheaper than that from fossil-fueled plants in European Russia and the Ukraine. A Soviet newspaper gave comparative 1976 costs per kilowatt hour for a Donetsk coal-fueled station (0.895 kopecks), the Konakovskaya station, using residual fuel oil and gas (0.712 kopecks), and Novovoronezh (0.632). (*Sovietskaya Rossiya*, October 7, 1977.)

Doubtless, costs at Soviet atomic power stations will be still lower when the standardized million kilowatt reactors are generally in use. If world prices instead of internal prices of fuels were used, costs at the fossil-fueled plants would probably be higher than reported in the newspaper article, increasing the advantage of the Novovoronezh station.

The first two reactors provide steam for rather small turbines of 73,000 kilowatts each, so that eight of them are required for the two reactors. The third and fourth reactors each are connected to two 220,000 kilowatt turbine and generator sets, while the fifth willl be connected to two 500,000 kilowatt sets. This arrangement involves the use of more space

and a greater degree of maintenance and control, as compared with the usual U.S. system whereby a large reactor of around a million kilowatts is connected to a single turbine and generator set of the same capacity. On the other hand, the Soviet system permits greater flexibility in adjusting production to shifts in demand.

It was in the building containing the third and fourth units that we looked down from the glassed-in enclosure on the reactor hall. Fortunately, our visit coincided with the refueling of the third reactor, which still had its 200-ton containment cover off so we could see what the inside of a reactor looks like.

It's amazing how small the reactor core is in relation to the vast expanse of a nuclear power plant. The core of a 440,000 kilowatt reactor has a diameter of 10 feet and a height of 8 feet. The tremendous energy generated by that reactor core is enough to supply electricity and heat to a city of a million people for a year without refueling.

The 349 new fuel assemblies, each containing 126 fuel elements of uranium dioxide coated with a zirconium alloy, were already in place, with boron absorbers set to prevent a nuclear reaction from occurring. Reactors are shut down for 25-27 days when refueling is necessary. It's usually scheduled for the spring or summer when energy demands are light (there isn't much air conditioning in the USSR).

Ovchinnikov joked about people who claimed that refueling shutdowns in the United States were much shorter, indicating his certainty that the actual time was much less in the USSR. I verified this on my later visit to a plant in Illinois, where I was told that refueling took as much as 10-12 weeks, but that it was hoped to reduce the time to 8 weeks.

The Leningrad plant, with its two 1 million kilowatt reactors, has a system for replacing individual burned-out cassettes of nuclear fuel without stopping the operation of the reactor. This work is done by a television-guided reloading machine. Obviously there is a substantial gain in the availability of the reactor's capacity with this system, although production will still have to be stopped at times for maintenance of the turbines and generators. (*Izvestia*, October 26, 1977.)

On-power refueling is also done at Canadian nuclear power plants, using the CANDU system with natural uranium fuel and a heavy water moderator.

At Novovoronezh, the heat energy from the active zone of the reactor is absorbed by the primary circuit water under pressure of 125 atmospheres. It flows in tubes through the reactor core, and is carried out in thick stainless steel-lined concrete pipes at a temperature of 270-290 degrees centigrade. The heat from this water is transferred to the steam generators, where secondary circuit water, isolated from the radioactivity in the primary circuit, becomes steam to activate the turbine generator sets.

We discussed environmental and safety questions at length. The water for the steam condensation is taken from the Don River nearby, and after use returned to the river. Environmental authorities OK'd this practice for only the first two reactors, ruling that if water from additional reactors were returned to the river, the heating effect would be harmful to its flora and fauna. So the plant erected cooling towers – five of them – for the third and fourth units. Here the water is cooled and recirculated. The cooling towers are high structures, sometimes mistakenly labelled reactor housings in news photographs. For the fifth unit, a large pool will be constructed to cool and recirculate the secondary water.

Regular tests are made of the radiation content in the nearby atmosphere, in the atmosphere 50 kilometers away and in the waters of the Don. The charts we saw covered two different major radioactive isotopes. The charter of radiation started in 1963, the year before the first unit was activated, and the line goes down sharply at first, then levels off. The decline was due to the U.S.-Soviet Treaty of 1963 barring nuclear tests in the atmosphere. Since then the line has been at the normal background radiation level, save for small blips when the French or Chinese conducted atmospheric nuclear tests. Operation of the Novovoronezh plant has not made any addition to the normal background radiation.

All plant workers are given weekly tests for absorbed radiation. The level of radiation is practically one-tenth that specified by the International Atomic Energy Agency (IAEA). That Agency specifies a maximum whole-body exposure of 5 rems per year, with an age-related cumulative maximum. The U.S. and Soviet standards coincide with this.

Data compiled by the U.S. Nuclear Regulatory Commission indicate that in a typical year as many as 200 U.S. nuclear power plant workers are exposed to between 5 and 12 rems of radiation, presumably under the provision allowing such a

one-year excess if the cumulative dose is not above the permitted amount. However, the large number of workers getting such a dose suggests that the IAEA's stipulation that this excess be limited to emergencies is interpreted quite liberally.

Currently in the United States there is discussion on a proposal to reduce the permitted level of radiation exposure for nuclear workers to 0.5 rems per year, with controversy among scientists and industry specialists as to the feasibility and necessity for such a reduction. Obviously the Soviet experience, including the actual radiation record of Soviet nuclear workers, would be quite important.

Ovchinnikov went on to say that not a single worker has ever had to stop working, or even temporarily leave the job, because of excessive accumulated radioactivity in his body. All maintenance and repair work is carried out under control of a *Radiation Control Service* which follows recommendations of the International Committee on Radiological Protection.

The Soviet Union is even more strict with respect to protecting the public from radiation – that is, not associated with nuclear power but present as a result of many other processes, including micro-wave installations and appliances and infra-red heating. The Soviet limit for exposure to this type of radiation is one-thousandth of the permissible limit in the United States!

What about a "loss of coolant accident" leading to a melt-down? The possibility of such an event frightens many people in the West. There's much controversy over the adequacy of protective measures. Ovchinnikov had no doubts on this score so far as his plant is concerned. Following IAEA procedures, the Novovoronezh designers and engineers have prepared automatic cooling adequate to protect against a projected "worst case" – Ovchinnikov smiled as he said this phrase in English. The "worst case" is a clean break in one of the main pipes carrying the cooling water to and from a reactor.

"It's impossible to imagine such a break," he said. "The chances are so slight that one such break might occur in a million years; but if it did happen, and necessary offsetting measures were not taken, the result could be very serious. There could be great damage to people and nature. That's why our designers do everything to guarantee safety, and to develop even further new technical means to improve safety."

Around each reactor there are four emergency reserve tanks. In the event of loss of the primary coolant water, this emergency water would immediately and automatically flood the reactor during the first crucial seconds, while the chain reaction is stopping.

With a "whoosh" it would instantaneously be converted into steam, in the process absorbing much of the excess heat, said Ovchinnikov. Meanwhile a larger supply of water would be pumped into the reactor and would prevent overheating of the active zone while the residual heating, after the chain reaction was stopped, gradually declined to a non-dangerous level. This water would be cooled and recirculated. A reserve generator is available to keep all water pumps working in case the primary source of electricity fails.

From the wall diagrams I located the marking and relative position of emergency cooling water pipes, and sure enough, as we went through the plant I spotted one of these pipes, set to pour the cooling water down onto the reactor area.

Each reactor has a special underground concrete, stainless steel-lined tank for storing used fuel, each with a capacity of the contents of two sets of cassettes of one active zone. The used fuel is stored for 3-4 years, until it cools sufficiently for safe transport, and is then transported away from the plant to processing facilities.

I asked Ovchinnikov if there were any public protests about the plant. He was quite aware of the anti-nuclear power protests in the U.S. and some West European countries. Concerning Novovoronezh, he said that when the station was first being built, people living nearby were worried about it:

"Our Radiation Control Service did explanatory work about the environmental problems. They did a good job and the complaints stopped. This has been helped, of course, by 15 years of accident-free operation. Now we get an inflow of labor from villages around Novovoronezh, which shows that the plant is accepted by the local people. We crossed this dangerous barrier."

The last sentence interested me especially. It meant that the director had been well aware of the possibility that public opposition could create serious problems, and possibly even prevent operation of the plant. But the people who feared the plant were taken seriously, given patient explanations and finally convinced by their own experience. In the Soviet

Union most officials are risen from the ranks, so to speak; engineers and scientists come from working people's familics and live among thc people. So there is a certain rapport, a disposition to have confidence and to listen to explanations.

At the time of my visit to Novovoronezh, there were slogans calling for reaching a cumulative output of 60 billion kilowatt hours by the time of the 60th anniversary of the October Revolution. As in all Soviet enterprises, the workers are expected to play a vital part in reaching the goal. Outstanding workers and winners of socialist competition are featured. Bulletin boards show plan and performance statistics and overplan pledges.

The enterprise had 3,500 employees, including repair, transport and administrative personnel. The average wage, slightly more than 200 rubles, was about one-third above the all-Union average. This is consistent with the high proportion of engineers and highly skilled technicians on the staff. Women account for 26-27 percent of the workers, and there are 900 members of the Communist Party, a higher percentage than in most enterprises. It suggests to me that special efforts may have been made to recruit personnel with a proven high sense of responsibility, in view of the nced to adhere strictly to safety rules in a nuclear power plant.

As is customary now in the USSR, living conditions of workers are given priority attention. The country has sufficient rcsources to coordinate the construction of enterprises and living facilities. So Novovoronezh, "the town of power engineers and physicists", is adequately supplied with new modern apartment houses, standard trade, service, health and cultural facilities.

At the plant there arc cafeterias and a substantial medical dispensary building. In the town of 25,000, a few kilometers away, there is a large Palace of Culture, with auditoriums, sports facilities, and an arts and crafts room featuring, at thc time of our visit, an exhibition of children's works. Propaganda for peace and disarmament is prominent in the in-house newspaper, whose editor we met, and in the social work of Party activists. The editor, V. Gribanov, gave us a copy of a letter he had sent to President Carter protesting anti-detente propaganda in the United States.

In the guest book at Novovoronezh there was an entry by a group of Americans headed by Walker L. Cisler, retired Chairman of the Board of the Detroit Edison Co. We thought it would be interesting to compare a nuclear plant of his company with the Novovoronezh plant. However, Detroit Edison does not yet have a nuelear plant in operation, although we were invited to visit its plant under construction.

I thought it more useful to visit one of the plants of Commonwealth Edison, which supplies Chicago and much of Northern Illinois with electricity, and has more nuclear power capacity than any other U.S. corporation. Such a visit was arranged.

George Travers, the corporation's director of public relation, filled us in on the company's involvement in atomic energy. It got started in 1950 in response to a request by the Atomie Energy Commission that private companies use their own capital to set up peaceful atomic energy plants. Commonwealth Edison's research team studied military reactors to see what might be adaptable for civilian use. They decided on the General Electrie boiling water type of reactor, and spcnt four and a half years in research before deciding to go ahead with it. Travers said they considered all the problems raised today by environmentalists, ineluding safety to workers and the publie, the long-term storing of waste products, and the eventual decommissioning of depreeiated plants, which have a projected lifetime of 40 years.

They finally concluded the project would work, and be profitable. In 1960 they started production at the country's first commercial nuclear power plant, Dresden-1, with a capacity of 207,000 kilowatts. It was about the same size as the first Novovoronezh reactor. Between 1970 and 1974 Commonwealth Edison put into operation six more reactors, at Dresden and two other locations. These were large reactors with capacities ranging up to 1,040,000 kilowatts, raising the company's total nuclear capacity to more than 5 million kilowatts, which produce more than 40 percent of the company's total power output. Another 6 nuclear reaetors, with a eombined capacity of 6.6 million kilowatts, are scheduled for completion between 1979 and 1982.

Travers insisted that the company officials were as anxious as anybody to assure safe operation. "After all," he

said, "we were sending some of our best friends out to run those plants, and would not want to risk their lives or health."

He was, of course, very much aware of the arguments pro and con nuclear energy. He said, however, that anti-nuclear sentiment had not built up much support in Illinois, as compared with some other states. An Illinois Commission on Atomic Energy buttresses the controls of the U.S. Nuclear Regulatory Commission.

Company report shows nuclear energy to be substantially cheaper than fossil-fueled electricity. The company claims hundreds of millions of dollars in savings, as a result. But so far as customers are concerned, the savings are strictly relative. Between 1970 and 1977 their average charge per kilowatt hour increased 80 percent. But this increase was less than the national average, and less than the increases of other midwestern companies with little or no nuclear power.

We visited the Zion, Illinois plant along with nuclear engineer Terence Reick, and were guided through the plant by plant official Lawrence Soth. This is Commonwealth Edison's newest plant. Like Novovoronezh, it uses pressurized water reactors, in this case made by Westinghouse Electric Corporation. That company operates a training station for nuclear power plant workers near the Zion plant, and its skilled workers and engineers, on a contract basis, overhaul the turbines and generators and refuel the reactors at the Zion plant. In an operating sense, then, one might say that the plant is under virtually joint management of the utility company and the equipment manufacturer.

The general plant layout was similar to that at Novovoronezh. Radiation monitoring in the region and in Lake Michigan, from which cooling water is obtained, is similar, and also shows no significant addition to background radiation.

The first conspicuous difference was in entering the plant. We passed through a special security building, where we had to fill out forms and pin on badges, and where armed guards frisked us for possible concealed weapons or explosives. We were told that 70 guards are permanently assigned to the plant and carry out perimeter patrols as well as in-plant security. There were no visible special security provisions at Novovoronezh. The fear of terrorist actions, which is not without basis in the capitalist countries, is not prominent in the Soviet Union.

The production units are much larger at Zion. There are two reactors, each with a capacity of 1,040,000 kilowatts, with a single comparably large turbine and generator set to go with each, along with a steam generator and auxiliary equipment. Everything is managed from a single control room, with one set of panels for each block and a third set of panels exclusively for the emergency core cooling systems.

As described to us, these systems were similar to those at Novovoronezh. In case of emergency, a 500,000 gallon tank of water is pumped into the reactor, along with concentrated boric acid, which acts as a suppressant of the chain reaction. In 1.8 seconds, heat production is reduced to 7 percent. In addition, there is a system of spray pumps to quench steam and reduce temperature. There is a three-foot thick wall, with steel-lined reinforcing posts, as containment for the reactor room. The Novovoronezh reactor building also had a thick outside wall, but it relied in addition on a series of inner chambers to contain possible radiation releases.

Supervisors at the Zion plant have to have had ten years of experience with nuclear reactors. In practice this means that they have had to work on nuclear submarines or other military nuclear installations. Soth was a submarine veteran. Operators also have extensive training requirements, with preference to submarine veterans.

All individuals are checked for radiation exposure on leaving the plant. This applies even to workers going out for lunch, and we were checked also. I asked about permissible radiation limits for workers. Soth described the official U.S. limits, equivalent to those of the IAEA, of 5 rems per year, distributed quarterly, with individual workers allowed to absorb up to 3 rems per quarter under special circumstances. These limits are considerably more than a person would normally get from background radiation, dental and medical X-rays. The people at Commonwealth Edison knew nothing about the IAEA or its standards, and the official publication of U.S. standards does not refer back to the IAEA. This seems to reflect what is a generally negative U.S. official attitude towards international agencies such as the United Nations, the IAEA, etc., as compared with the positive attitude of the Soviet Union towards these organizations.

Apparently Commonwealth Edison does better than the official standards require. In 1976 the average worker at the Zion station received less than a rem in the whole year, and

only a few workers, engaged in radiation checkups or refueling, received more than a rem. (*Zion Station, Radioactive Waste, Environmental Monitoring and Occupational Personnel Radiation Exposure*, Report to Nuclear Regulatory Commission, 1976, p. 145.)

People at Zion require special training for procedures in relatively high radiation areas of the plant. Because there was not time to give us a short training course, as required by Nuclear Regulatory Commission rules, of about two hours, we were not admitted to the reactor room or other areas of potential radioactivity.

While proud of the plant's safety measures, Soth complained of "regulatory overkill". It's a favorite complaint of U.S. company officials. But is it justified? *Business Week* writes:

"Although Comm. Ed. has been an adept builder of nuclear plants, critics say it has often operated these facilities poorly. Since 1974 the company has been fined $84,500 by the NRC for various violations. Just last week it passed Virginia Electric & Power Co., to gain its dubious distinction of 'most fined'." (*Business Week*, October 24, 1977.)

True, most of these fines were for relatively minor violations, which did not directly threaten anybody's safety. Yet, one wonders whether without the "overkill" corner-cutting might not result in really dangerous accidents.

Apparently in the Soviet Union also, plant managers sometimes evade safety and environmental requirements, in the interest of higher production and/or lower costs. But I heard no complaints of regulatory overkill, and in particular at Novovoronezh, director Ovchinnikov indicated full support for the safety authorities.

The Zion station staff consists of only 380 employees, including 280 in the collective bargaining unit of the International Brotherhood of Electrical Workers. There are several hundred others – contract workers of Westinghouse, and an additional 70 security guards, who are also employed by an outside firm. Altogether, then, plant personnel total 700-800.

With one-fifth the personnel of Novovoronezh, Zion produces more electricity. Of course, Novovoronezh has 4 reactors to Zions's 2, and Novovoronezh has 12 turbine and generator sets, Zion 2. The larger number of units, regardless of their size, obviously calls for more operators. In addition, Zion lacks the in-plant medical personnel, food services and

dispensary which Novovoronezh has. Many workers at Zion go home for lunch – 40 percent live in the small town of Zion, others bring a sandwich. The Novovoronezh total also includes workers engaged in constructing the fifth block.

Thus, the difference in number of employees does not signify, necessarily, a less efficient operation at the Soviet plant, nor, on the other hand, undermanning at the Zion plant. In any case, production labor accounts for a very small proportion of the total cost of producing electricity.

With its small number of permanent employees, most of whom commute from surrounding towns as far away as 50 miles, the Zion plant has created no big boom in Zion itself, no parallel construction of a city for the workers, as is the case where there are major Soviet plants. Nor is there any systematic involvement of the workers in plant planning, as in the Soviet Union.

As was the case when we visited the Novovoronezh plant, on the occasion of our visit to Zion, one of the reactors was shut down for refueling. At the same time, the turbine was being completely overhauled, and other components of the system associated with the reactor were being thoroughly tested. Skilled Westinghouse workers were making tests and checking equipment and panel controls at various points. I noticed a few Black workers among them, as well as elsewhere in the plant. However, I didn't see any women workers, except among the security personnel.

The block being overhauled was to be shut down for a total of four months, of which two-three months would be required in any case for refueling.

INTERNATIONAL RELATIONS

The nuclear programs of the United States and the Soviet Union have developed independently, owing to the initial vain attempts of the U.S. Government to maintain an atomic monopoly and to the subsequent military secrecy imposed by both countries. The United States initiated the military-based secrecy policy, and denial of atomic energy equipment to socialist countries, in the vain hope of maintaining an atomic monopoly after World War II. However, the underlying scientific principles were as well known in the Soviet Union as in the United States, and when the original U.S. Smyth report detailing the principles of production of the atomic

bomb was published in 1945, the effectiveness of secrecy was reduced to technological details.

So it is not remarkable that the independently developed Soviet and U.S. designs of nuclear energy installations have so much in common. In recent years there has been a limited amount of cooperation. Visits between U.S. and Soviet nuclear plant officials have been exchanged. In 1978 there were reciprocal delegations on nuclear plant safety. Both governments cooperate with other nuclear equipment-exporting countries in striving to establish procedures to minimize the diversion of nuclear materials for military purposes. The USSR has some significant technical accomplishments in nuclear energy that the United States lacks – such as the automatic refueling devices at Leningrad, the graphite-moderated reactors at Chernobyl, and the advanced experience with breeder reactors. Scientists of the two countries are cooperating closely in the development of thermonuclear energy for future generations. The present generation in all countries suffers from the lack of such cooperation in today's atomic energy and other high-technology areas.

Chapter V

AGRICULTURE

No aspect of Soviet economic life is criticized more disdainfully by Western critics than agriculture. A downcast peasant leading a bony nag is pictured in the U.S. press as "typical," a victim of "forced collectivization" who sabotages socialist agriculture by not doing any work except on his own small plot. Soviet agriculture, it is alleged, is in a chronic crisis, unable to feed the people, and the government needs "American aid" to avert starvation. If this is not the exact language, it accurately portrays the impression created by the U.S. press on U.S. readers about Soviet agriculture.

It's far off the mark. In fact, agriculture has been one of the great success stories in Soviet development. Materially, it has achieved new rates of agricultural growth. Socially, it pioneered in establishing the complicated socialist forms of agriculture, which are now firmly set up and fully supported by the overwhelming majority of the 64 million people, including dependents, living on farms.

In the simplest terms, the "bottom line" is the success of a system in feeding the population. Soviet agriculture was not fully socialized until the mid-thirties. Before it had a chance to prove itself, the war intervened, with the terrible destruction and pillage by nazi invaders and with the departure of most of the manpower to the front. This proved a stern test for the collective farm system, and it came through with flying colors. In the incredibly difficult conditions of the war, with the best farmland occupied by the enemy, with a labor force of women, old people and children, the collective farms provided the country with enough food to avoid famine and to adequately feed the soldiers. I'm convinced that a system of private peasant holdings could never have coped.

By 1950 the most obvious material scars of war were healed. But the manpower losses had not been made up, and for million of bereaved widows and orphans, never could be.

In that year the Soviet people were getting enough to eat, although their diet was not well balanced. But over the next 25 years, per capita consumption of food, in terms of real value – that is, taking account of the improved quality and composition of the diet – increased 110 percent. That's not a Soviet figure; it's the estimate prepared for a U.S. Congressional committee by a far from friendly agency, the CIA! (Gertrude E. Schroeder and Barbara S. Severin, "Soviet Consumption and Income Policies in Perspective", In *U.S. Congress Joint Economic Committee, Soviet Economy in a New Perspective*, U.S. Government Printing Office, Washington, 1976, p. 622.)

The details of that gain in nutrition are worth recounting. They are shown in the following table.

Per Capita Consumption of Key Foodstuffs in USSR, in kilograms, 1950 and 1975

Item	*1950*	*1975*	*Percent Increase*
meat	26	57	119
fish	7.0	16.8	140
milk	172	316	84
eggs (units)	60	216	260
sugar	11.6	40.9	252
vegetable oil	2.7	7.6	181
vegetables	51	89	75
fruits	11	39	255
potatoes	241	120	–50
grain products	172	141	–18

Sources: 1950 from *Narodnoye Khozaistvo SSSR v 1964*, p. 603, 1975 from *SSSR v Tsifrakh*, 1976, p. 204.

I doubt whether any country ever achieved such a dramatic increase in the quality of food consumption in such a short period: per capita consumption of meat and fish more than doubled; eggs, sugar and fruits, more than tripled; and there were big increases in the consumption of milk and vegetables. While, in harmonious counterpoint, there was a halving in the consumption of the traditional "poor man's food", potatoes, along with a modest reduction in the consumption of grain products.

If we take production, we find that Soviet farm output

increased 129 percent, while U.S. farm output inereased 53 percent, between 1950 and 1976. And this was a period of unprecedented advance in U.S. agriculture. At an annual rate, the pace of Soviet farm output growth was almost exactly double that of the United States – 3.24 percent vs. 1.64 percent. (*Narodnoye Khozaistvo SSSR, 1975*, p. 48; *SSSR v Tsifrakh*, 1976, p. 28; *Statistical Abstract of the United States*, 1977, p. 695.)

However, there are still serious problems.

The supply to the population of meat, fruit and vegetables is still substantially below the levels considered biologically most desirable by medical authorities; the supply of high-protein feed for farm animals is insufficient; and the supply of certain non-food crops to industry is still less than desired.

The growth in Soviet farm output, phenomenal as it has been, has too often fallen behind planned rates; and the huge investments put into agriculture during the past 15 years have not given a proportional return. The total investment in agriculture for the period 1966-1980 approaches 400 billion rubles. which is more than one-fourth of all investments in the economy; and its share is increasing.

Consider this: for every ruble of increase in the fixed assets of Soviet industry between 1970 and 1976, industrial production increased 1.20 rubles. But for every ruble of increase in the fixed assets of Soviet agriculture over the same period, production increased only 0.15 rubles. (T. Khachaturov, *The Economy of the Soviet Union Today*, Moscow, 1977, p. 110; *SSSR v Tsifrakh*, 1976, pp. 93, 116.)

This low effectiveness of capital investment in agriculture reduces the efficiency of capital in the overall economy and slows the overall rate of economic growth. The Soviet leadership is, publicly, very concerned about it.

Yet it is necessary to view this huge investment from a long-term perspective. It's the main thrust of a great effort to change radically the general aspect of agriculture over the vast area of the USSR. At present it is limited by and subject to wide fluctuations on account of unfavorable natural conditions. The object is to transform it through investments that create more favorable environmental conditions and through application of industrial-type technology. The goal is to achieve steadily rising, high-level farm output, with a markedly improved ratio of output to capital.

I think this strategy will succeed. But it is taking longer

than the Soviet leadership originally expected, and involves the application of more resources.

I believe that when the amount of irrigated land and reclaimed drained land reaches a specified acreage, along with the necessary complement of agricultural equipment, chemicals, storage facilities and roads, Soviet agriculture will achieve high-level stable growth. That is, fluctuations in crop production will be substantially reduced. Storage facilities and reserve supplies will be sufficient to feed all livestock, regardless of crop variations. And the qualitative shortcomings in the supply of food to the population will be overcome regularly, year after year.

The present goal is to reach that stage by 1990; that is, in another 10-12 years. However, the present Soviet leadership is cautious, and sets goals that take into consideration the whole complex of problems and measures necessary to deal with them, wherefore their projection appears reasonable.

That the goal will be reached is not in doubt. And the chances of its being reached in the next decade or so are real.

ECONOMIC AND SOCIAL FACTORS

Socialism, to triumph in the Soviet Union, had to be spread by the working class to the peasantry, from industry to agriculture. This was especially difficult, given the legacy of poverty, illiteracy, and backwardness that characterized rural life in Czarist Russia. An avowed goal of Communism is to eliminate the gap between town and country, an objective never before set by any social order. Lenin wrote on this in a particularly instructive way.

In order to abolish classes completely, he wrote, it is not enough to overthrow the exploiters, it is necessary to abolish the distinction between town and country, as well as the distinction between manual and mental workers, it is necessary to overcome the resistance of the numerous survivals of small-scale production; it is necessary to overcome the enormous forces of habit and conservatism which are connected with these survivals: "It will take generations to remould the small farmer and recast his mentality and habits. The only way to solve this problem ... is through the material basis, technical equipment, the extensive use of tractors and other farm machinery and electrification on a vast scale.

This would remake the small farmer fundamentally, and with tremendous speed. If I say this will take generations, it does not mean centuries." (V. I. Lenin. *Collected Works*, Progress Publishers, 1975, Vol. 32, p. 217.)

In 40 years, actually, if we leave out wars and postwar construction, a substantial part of the job has been done. It's my opinion that, given continued peace, within a century of the October Revolution the social and economic differences between town and country will no longer be significant.

The revolution, in its first year, gave land to the millions of peasants with no land or not enough land. It established the political basis for the alliance between the workers and peasants, which enabled the revolution to defeat its many and powerful enemies. But it also created a myriad of small-scale commodity producers, with scattered plots of land and no modern equipment. They could feed themselves better than before, but could not produce enough marketable surplus for the rapidly multiplying non-agricultural population. And the history of class differentiation, which had always accompanied small-scale commodity production, was quickly repeated. A minority of stronger peasants accumulated land and livestock at the expense of the weaker ones, capitalism revived in the countryside, and a fierce class struggle developed.

Socialization of agriculture became a necessity in order to improve the techniques and organization required to increase farm output and to supply the cities. It was essential to finalize the victory of socialism over capitalism.

The battle for the socialization of agriculture during the 1930s was intense. The capitalist farmers ("kulaks") did engage in widespread, organized sabotage, destruction of livestock, murder of Communists; and they were helped by foreign capitalist agencies.

Retribution was prompt and decisive: many were exiled to the east or north; quite a few who engaged in armed opposition were killed. But the collectivization of agriculture was successful because it was supported by the majority of the peasantry, a majority that increased as the reluctant ones saw the benefits gained by those who first joined.

Certainly, the peasants initially stepped into the collectives with one foot, so to speak. They kept "their own" plots and contributed also to the socialist sector. They did tend to work harder and more regularly on "their own" than on the collective enterprise. Gradually, however, as the material re-

wards for collective agricultural work improved, and as the educational and political level of the peasants was raised, the balance shifted. The peasants came to regard the entire collective farm as "their own" and to devote their best efforts to it.

By now, the farm population is overwhelmingly socialist in orientation and activity. The prototype is not a careworn illiterate or semi-literate peasant with a hoe but a young agricultural machine operator, with full elementary or special-workers, or, if collective farmers, they receive most of their workers, or, if collective farmers, they receive most of their income in the form of wages.

No longer is it necessary to divert the energies of the farmers from their private plots to the collective. The main problem is to raise the economic rewards, and especially the cultural and social amenities, in the countryside sufficiently to reduce labor turnover, and to build a stable, highly skilled core of farm personnel.

Statistics indicate economic progress. In 1960 the average wages of state farm workers were two-thirds those of all workers. By 1976 farm workers' wages had multiplied two and one-half times and were nine-tenths those of all workers. And the gains of collective farmers were even more dramatic. Between 1960 and 1977 their income from collective farm work, per farmer, increased three and one-half times, from one-third the income of the average worker to more than two-thirds. Taking into account their supplementary income from personal plots, their total incomes were much closer to those of workers. (*Narodnoye Khozaistvo SSSR, 1974*, p. 555; *SSSR v Tsifrakh*, 1976, p. 182; *Narodnoye Khozaistvo SSSR, 1922-1972*, p. 263; *SSSR v Tsifrakh*, 1976, pp. 138-139; *Pravda*, January 28, 1978.)

In the United States the income of farmers and farm laborers is still less than half that of all workers. U.S. agriculture is technically still ahead of the Soviet Union, but socially it has fallen far behind. The endless resistance of capitalist farm owners to the elementary demands of the Farm Workers Union and the recent strike of farmers for prices needed to survive show that it is the social system of capitalism, and the drive for the highest profits for capitalists, which are responsible for the continued lag of agriculture. I found particularly interesting the following letter which appeared in *The New York Times*:

"I read with interest that Soviet communal farm laborers made $250 a month (*News* story Feb. 21). When I worked in a Florida farm work camp in early 1977, I made $15 a week, usually a little less, after room and board. That is $60 a month. In the Soviet Union, allowing $150 a month for room and board (reasonable in a socialist country), the worker is left with $100, about double what I and my fellow workers made each month. That to me is very surprising.

In the Florida farm work camp, the food was ample but of poor quality; the water, from a private well, was untreated.... There was no TV. Leisure was spent drinking, sleeping, gambling, playing cards or fighting. There were no books or magazines. The nearest town was nine miles away."—signed Victor Kogerma.

PERSONAL AUXILIARY HOLDINGS

A characteristic factor of Soviet agriculture is the importance of the personal auxiliary holdings of collective farmers and state farm workers. These are small plots of land, allotted to each farm family, on which they raise what crops they please and some livestock, for personal use and for marketing.

Socially, they are a remnant of small-scale commodity production within a socialist economy. They are not a capitalist element, because they do not employ hired labor. They are important in the Soviet system because of their particular origins and history in the collectivization of Soviet agriculture. A personal garden, a cow and chickens are part of the strong peasant traditions of the huge farm population, and are a step in the transition from private farming to socialist collective and state farms. Now, although all farms have been socialized, the plots remain relevant because, with large-scale mechanized farms, despite the declining farm population, there are still rural people who have time to devote to their own gardens and livestock; and the more each family produces for its own consumption—and for sale at local and district farmers markets—the less food has to be brought in to the area, resulting in a substantial saving in transportation and processing costs.

Critics of Soviet agriculture portray these holdings as an expression of "private enterprise" in opposition to socialist

agriculture, as the area where the Soviet farmers really concentrate their energy, as a crutch without which the population could not be fed. Their existence is cited as evidence of the "failure" of socialized agriculture.

Certainly, in the early period of collectivization, the contradictory elements were significant, and there still must be situations where farmers devote more attention to their own plots than to their jobs on the collective or state farms.

But the general picture is different. Whereas, in 1940, about half the income in cash and in kind of a typical collective farm family was from its personal holding, by 1975 that was reduced to one-quarter. (*Narodnoye Khozaistvo SSSR, 1975*, p. 597.)

Moreover, a substantial part of the income from personal holdings is attributable to the feed, fertilizer, and equipment supplied by the collective or state farm. Other statistics indicate that today most of the vegetables, fruits, and livestock products raised on personal plots are consumed by the farm family.

Before World War II, urbanites bought most of their eggs, meat and milk from peasants, mainly at collective farm markets. But by 1975 only 14 percent of the total marketable share of animal products came from personal auxiliary holdings. (V. Morozov, *Soviet Agriculture*, Progress Publishers, Moscow, 1977, Table 6, page 89.)

As farmers' incomes from collective and state farm work rise, as the range of commodities and services available to them increases, and their cultural and recreational opportunities improve, they are less inclined to spend time on gardening, on caring for cows and chickens, etc. Government policy is to encourage the maintenance of personal plots and to forestall a precipitate decline in their output, which could cancel out part of the gain in the total available supply from introducing large automated egg and broiler factories, cattle feedlots, etc.

In the German Democratic Republic and Czechoslovakia, where, formerly, capitalist agriculture had been far more advanced than in Czarist Russia, the equalization of farm and non-farm incomes and living conditions has been easier. Already incomes of farmers and farm workers are at least as high as those of non-farm workers, and there is less incentive or need for personal supplementary farming and marketing.

VISITS AND INTERVIEWS

We visited three farms and two agricultural research institutes in 1977. Obviously that's hardly enough to give a comprehensive picture of Soviet agricultural life, but the visits were very instructive. And the people we talked to at the institutes did, in fact, provide rather full and rounded information concerning the main problems and directions of development of Soviet agriculture.

AGRICULTURAL RESEARCH

Very knowledgeable, sophisticated people are leading agricultural research work in the USSR. We met with Victor Nazarenko, deputy director of the All-Union Research Institute of Agricultural Economy, and some of his department heads, in Moscow. Nazarenko speaks English colloquially, and at machine-gun pace. He is in frequent contact with U.S. colleagues; and a half year after our visit, I saw his picture in *The New York Times* as one of a Soviet delegation visiting a New Jersey farm.

In addition to analyzing the problems faced by Soviet agriculture, and explaining the main features of the agricultural development program, he emphasized certain strong points and accomplishments that are little known in the United States.

Climate and soil conditions in the USSR are very difficult. With the main crop lands of the Soviet Union located far to the north of those of the United States, the Soviet yield is 2.8 times less than that of U.S. crop land. While the total territory of the USSR is more than twice that of the United States, the arable area is no greater: the rest is swamp, arctic tundra, mountains, desert and forest.

In general there is far less rainfall, and at seasonally less favorable times – more than 70 percent of farm output is in areas of uncertain, often inadequate, precipitation. From the Volga eastward, there is an average of less than 12 inches per year, which causes very great fluctuations in yield. All potential virgin lands have already been brought under the plow.

The Soviet Government and farming establishments are cooperating to overcome these natural handicaps through a program of agricultural investments far beyond anything pre-

viously known: Nazarenko estimates Soviet agricultural investments during the 1970s at two and a half times the corresponding U.S. amount.

The three main areas, involving the largest sums, are: (1) irrigation, drainage, land reclamation; (2) fertilizers; (3) mechanization. Also very important, but less costly, are the training of labor, and the intensification of agricultural-scientific research to improve crop varieties and livestock breeds. All these have to be coordinated with relevant improvements in economic and social measures and in the management and planning of agriculture.

The first group of projects alone involves spending 40 billion rubles during the 1976-1980 five-year period.

For example, irrigation is needed for all the cotton grown in the USSR. Soviet production of this crop is now 12 times its pre-World War I level and $3\frac{1}{2}$ times the pre-World War II level. It has surpassed U.S. output—by 19 percent in 1976—and leads the world.

In the United States, cotton has been largely replaced by synthetics, and the government pays farm owners to keep down production. But the Soviet government, while encouraging higher output of synthetics, aims for a still further rise in cotton production, with special emphasis on long fiber cotton, to meet not only its own needs, but also those of other CMEA countries. Also, the USSR relies more on cottonseed oil, as it lacks some other sources of vegetable oil available in the United States.

Vegetable, fruit, and forage crops are being irrigated more and more. The Soviet Union is increasing the number and size of rice plantations, which require intensive irrigation, and it will gradually extend irrigation to strategically situated grain lands.

Equal in scope is the mammoth effort involved in draining and ameliorating the marshy lands of the central and western parts of the Soviet Union—the Non-Black Earth zones of the Russian Federation (RSFSR), Byelorussia, and the Baltic republics. Here there is generally adequate rainfall; and through drainage, liming, etc., the prospect is to convert the area into a major source of feedstuffs, livestock products, and vegetables, with emphasis on year-round supplies of vegetables from hothouses.

Production of fertilizers has increased 30 times since World War II, and now leads the United States and all other countries. But the USSR lags in sources of phosphate, one of the three main fertilizer materials. It is remedying that in part through huge long-term agreements with Morocco and the United States. The U.S. deal includes an exchange, with the Occidental Petroleum Corporation, of Soviet ammonia for Florida phosphates. A key part of this transaction involves Western financing and supply of equipment and technology for a number of ammonia factories, part of the output of which will be shipped to Occidental Petroleum in exchange for the phosphates.

Timely completion of new fertilizer factories is necessary if the Soviet Union is to reach its goal of 115 million tons (in standard units) of fertilizer output in 1980, up from 97 million tons in 1977.

Nazarenko attributes one-half of the increase in Soviet crop production to increased use of fertilizers, which would make it the most important of the three main factors.

For mechanizing agriculture, the Soviet Union is now producing over one-half million tractors per year, half the world's output and more than double the U.S. rate. However, the stock of tractors on farms is only half that in the United States. Exact comparison, as of 1976, is that the Soviet Union had 54 percent of the number of tractors, 46 percent of the trucks, and 107 percent of the grain combines of the United States. In capacity of tractors and trucks, the USSR came somewhat closer to the United States. (*SSSR v Tsifrakh*, 1976, p. 133; *Statistical Abstract of the United States*, 1977, p. 693.)

I asked why, with so many more tractors produced, the Soviet Union remains behind in the number of tractors on farms. Tractors are used more intensively in the USSR and wear out quicker, Nazarenko said; repair services are inferior to those in the United States, and Soviet farms have been replacing old tractors with recently improved, more powerful and faster models.

Actually, the Soviet Union needs more tractors. Because of the short harvest season and great distances, tractors and other farm equipment have to be on hand in many places; the possibility of moving them from area to area with the harvest is limited.

And also, judging from Soviet press reports, inadequacies in the supply of spare parts and poor organization of work at repair centers lead each year to large numbers of tractors

and other crucial agricultural machines being unavailable when they are most needed.

About 40 percent of the Soviet Union's tractor output is exported or otherwise unavailable to domestic agriculture, a higher share than U.S. exports.

Undoubtedly one problem with the maintenance of tractors is the instability of the labor force of tractor drivers. I asked Nazarenko to comment on a Soviet article complaining that while 10 million men had been trained as tractor drivers, only 1 million were active in that capacity.

He said that higher wages and better living conditions are needed if young people are to stay in agriculture. Part of the problem relates to the seasonal nature of the demand for tractors. Right now much of the work is done by temporary workers, such as taxi drivers who handle tractors in the harvesting season. The government wants a permanent staff of tractor drivers in agriculturally intensive areas with a variety of products, like the Ukraine, but not in places where the harvest is brief, like Kazakhstan.

In explaining other areas of development, Nazarenko estimated that plant breeding and seed selection can raise output 20 percent. He cited increasing production of meat as the most difficult challenge facing Soviet agriculture. And, to this end, while the improvement of breeds is certainly important, the decisive factor is the supply and quality of feedstuffs. The USSR has lagged behind the United States in providing high-protein feeds, including urea and soya. The explosive growth of soybean production in the fertile U.S. Midwest during the past two decades has greatly strengthened U.S. farm output and its foreign trade position.

Soybeans, like corn, require a warmer climate than exists in most of the Soviet farm areas. However, in December 1977 the Communist Party and Government called for working out an 8-year program (1978-85) to organize large-scale production of soya in the southern regions of the European part of the USSR, Transcaucasia and southern Kazakhstan, and to increase the already significant output in the Far East. Farms which start growing soybeans for the first time will be paid a premium of 20 percent over the regular price for the first three years. (*Izvestia*, December 27, 1977.)

I asked Nazarenko about a Central Committee decision to adopt a major program to increase the production of broilers. Nazarenko explained that this was the most effective way to

increase rapidly the supply of meat. For broilers, 4 feed units are needed to provide a kilogram of meat, as compared with 7-8 for pork and 11-12 for beef. Nazarenko explained to me differences in the definition of feed units in the two countries, so that 4 Soviet feed units per kilogram of broiler weight are equivalent to 3 U.S. feed units per pound of broiler weight.

There is much emphasis in the USSR today on interfarm cooperation; and a major area of application is in the establishment of huge broiler factories, too large for the resources of any single farm. In some cases, specialized state breeding farms will provide the baby chicks, while individual kolkhozes and interfarm broiler factories will feed them.

Production of eggs and poultry had already doubled between 1965 and 1975. In 1977 egg output reached the very respectable level of 235 per capita, about 15 percent below the per capita consumption level in the United States. According to Brezhnev's July 1978 report on agriculture, requirements for eggs are already being met, so the emphasis now is on poultry.

Interfarm enterprises are also required, Nazarenko said, to set up feedlots with 10,000 and more head of cattle and for some other operations where productivity can be sharply increased with large-scale setups. There are now about 7,000 of these organizations, built up mainly during the 1970s. Initially they were mainly for construction work – interfarm construction organizations employ 1.1 million people. But the number of these organizations engaged in production of mixed feed, livestock, conserves and other food products, linen, construction materials, etc., is increasing rapidly. By 1976 they had 3.6 billion rubles in capital, and employed 367,000 workers. (*Narodnoye Khozaistvo SSSR za 60 let*, p. 364.)

Nazarenko stressed that these interfarm organizations are part of a movement towards an integration of farm raw material production with food processing. Farm management of a new type has to be developed, he said, capable of leading agricultural-food complexes. (Later I saw an example of this at the Adazi farm in Latvia.)

Nazarenko was quite optimistic about the prospects of Soviet agriculture. Labor productivity is increasing at a rate of 5-6 percent per year except in drought years, he claimed. He thinks there are exaggerations in the Western comparisons of U.S. and Soviet labor productivity in agriculture. He

thinks that U.S. statistics underestimate the number of migratory workers employed in its agriculture, and he notes that the definition of agriculture is broader in the Soviet Union than in the United States. Also the less favorable natural conditions in the Soviet Union require more labor input than in the United States. Nevertheless, Soviet agricultural scientists do learn what they can from U.S. experience to improve farm productivity, which remains much lower than they would like.

Food consumption, Nazarenko conceded, is still not up to standards set by Soviet nutritionists, although it is excellent in some respects. For example, milk production and per capita consumption of milk are considerably ahead of the U.S. levels – acording to Soviet calculations, 20 percent more. The most difficult and important area, requiring a big increase, is production of meat; and the fruit consumption level is still poor. The Soviet Union has virtually no citrus, but it is rapidly increasing output of other fruits; and the area of non-citrus orchards is now larger than in the United States. Many of these are young and not yet bearing fruit. When they mature, there will be a vast improvement in the fruit supply.

Greenhouses are playing an important part in increasing the supply of fresh vegetables and fruit and in extending the supply to the winter months. There are now more than 100 hectares of greenhouses around Moscow. Vladislav Labenets, head of a department in the Institute, predicted that by 1985-90 per capita food consumption will reach the optimum scientific norms established by the Academy of Medical Sciences. Of course, that does not mean an increase in calories – the quantity of food consumed is already more than adequate. It refers to an increase in animal proteins, fruits and vegetables, vitamins – of high quality foods in general – to what is regarded as the medically most appropriate level.

The buildup of orchards and greenhouses is expected to yield substantial crops by 1980, with per capita consumption of fruits up 22 percent and vegetables 29 percent from the 1977 level. The goal for increasing meat consumption per capita in these three years is more modest – 10 percent, perhaps reflecting the considerable distance yet to go to solve the feed problem.

As of 1975, per capita Soviet consumption of meat, poultry, and fish combined was two-thirds the U.S. level, but this was

partly offset by a 20 percent Soviet advantage in milk consumption. Leaving aside differences among medical authorities about desirable diets, Labenets' prediction of achieving the established standards by 1985-90 seems about in line with the actual rate of progress. And what is involved here is not improving a poor diet, but raising a good diet to an excellent one.

To some extent, shortages of meat reported from the USSR reflect the desire of people who suffered an acute meat shortage during World War II and its aftermath to give priority to increasing their consumption of this strength-building food, as their economic situation improves. Thus, with their rapidly rising incomes, workers tend to spend more for meat; but their demands cannot yet be met because of the slower increase in meat production. In most East European socialist countries, per capita meat consumption has already reached the West European, and in some cases the U.S., level. Yet the Polish people, for example, who have enjoyed a spectacular increase in meat consumption during this decade, demand still more.

Labenets pointed to the need to expand farm production constantly to follow the course of industrial growth. The BAM railroad and other major Siberian projects require the extension of Siberian agriculture. And in this connection, I was referred to the work of the Siberian Department of the Academy of Agricultural Sciences, headed by Vasily Boev. At Akademgorodok, Novosibirsk, I had an extremely interesting meeting with Boev.

SIBERIAN AGRICULTURE – THE GOAL: CANADIAN PRODUCTION LEVEL

Vasily Boev is the first deputy director of the Siberian Branch of the Academy of Agricultural Sciences and a Corresponding Member of that Academy, as well as director of the Academy's institute dealing with agricultural chemicalization. This is one of ten Siberian agricultural institutes, for cattle breeding, agricultural economics, electrification, experimental plant growing, Far Northern agriculture and other topics. There are 2,300 workers, including 1,300 scientific and technical specialists, in the 10 institutes.

Boev is enthusiastic about the future of Siberian agriculture. He is confident it will catch up to Canada in farm

output, despite less favorable climatic conditions.

Boev explained the problems of some major farm areas west and south of Novosibirsk – the Barabinskaya lowlands and the Kulunda Steppe, which extend from the foothills of the Altai Mountains into Kazakhstan. This whole vast area has fertile soil; but the Barabinskaya lowlands are swampy and waterlogged, while the Kulunda Steppe has far too little moisture. The Altai is favorable for growing strong, hard-grained wheat, and for sheep breeding, *when there is enough water*. In poor years there are only 7-10 inches of precipitation; in better years 10-12½ inches, which is a marginal amount. Even with improved strains of grain, application of fertilizer and soil improvement measures, in drought years the yield is only 6-8 centners per hectare; in good years, 14-18 centners. In 1972, with exceptionally good conditions, the yield was 22 centners. The country got 5 million tons from the Altai, 20 million tons from all of Siberia.

Twenty years ago, the virgin lands program was started in Kazakhstan and Western Siberia. Foreign critics sneered, but it has been successful. On the average, the virgin lands add a significant volume to the country's grain crop. In 1972 and 1979, when conditions were good in the virgin lands and bad in European Russia and the Ukraine, they made the difference between a mediocre and a very bad crop year. The average grain harvest in the USSR has doubled since 1940, and one-third of that increase can be attributed to the virgin lands program.

Meanwhile, Boev pointed out, the social measures characteristic of Soviet economic development – such as we saw in Surgut and Nizhnevartovsk – have changed the entire virgin lands area. There are new towns, community services, roads and enterprises producing necessities for the multiplied population.

The water problem is being solved step by step, he said. A great amelioration program is underway from individual plots to large agricultural complexes. In the Altai, 220,000 hectares will be irrigated with water pumped from the Ob, with the first 30,000 hectares irrigated in 1977. The 220,000 hectares, however, are only a small fraction of the total Altai grainland (perhaps one-tenth). Some supplement to irrigation is provided by banking winter snows to delay melting and thus to prolong the presence of winter moisture into the growing season. Meanwhile, Siberian selectionists are

searching for improved strains of wheat. They claim Novosibirskaya 1967 has increased yields by more then 3 centners per hectare.

A major objective is to develop agriculture in areas of great population increase, such as Baikal and the BAM railroad. At present, food is brought in, but steps have to be taken to see to it that vegetables, fruits and dairy products are produced locally. It is difficult, because there are only 60 to 80 days of warmth. But it can be done, with the aid of greenhouses.

The Academy's perspective is to have Siberia produce all of its basic food needs, plus, for shipment to other parts of the USSR, wheat, meat, wool and potatoes. Boev is the author of a plan to form a "green bridge" between Western Siberia and Soviet Central Asia. Siberia will ship milk, potatoes, etc. south in exchange for grapes, fruits and vegetables.

I asked Boev about the reported paradox of net migration from Siberia despite the vast industrial development. He explained that while the population is increasing rapidly in the cities and the centers of major projects, it's still declining in the old Siberian villages. Up to a point this was not a bad thing, as the villagers were engaged in low-productive farming. Then, with the modernization of agriculture, fewer people are needed, even though production has multiplied.

But now this process has gone far enough, and in some places too far, so agriculture is suffering from migration. Policy is directed toward slowing or stopping migration in many rural areas. Living conditions are improving, there is not a single village without a school, a movie theater and shops. Some villages have more services than the towns, and there is reverse migration to them.

In fact, just recently I have read that the overall population tide has turned, and there is now net migration into West Siberia, with its population increasing by 30,000-40,000 (about 3 percent) per year (*Soviet Union*, No. 5, 1978, p. 39). Boev thinks that in 10-15 years, typical villages will have 1-3,000 people, with roads to the oblast centers, helicopters, railroad connections, etc., and all conditions for a good life. This will solve the contradiction between town and country.

The work of improving the training of agricultural special-

ists and multiplying the volume of research was visibly evident as we spoke. Next to the building where we met, a major construction project was underway: builders were erecting an architecturally imaginative complex for a vast agricultural institute – including housing – for 12,000 people, among them 6,000 scientists, at a cost of 120 million rubles.

AGRICULTURE ON THE BALTIC

In Bulgaria, for some years agriculture has been concentrated in about 150 agro-industrial complexes. Use of land is planned, production coordinated, and labor allocated over a county-wide area. Industries are established to provide productive year-round employment for all and to get the larger-scale, efficient production possible with modern machinery.

More recently the Soviet Union has moved in the same direction, with emphasis on interfarm agro-industrial complexes, in a somewhat looser and more varied structure than Bulgaria.

In Latvia we visited the Adazi collective farm north of Riga – a self-contained agro-industrial complex. Its industrial operations have increased sharply in recent years until now, they bring in an income at least equal to that of the agricultural production.

The collective was organized in 1948, when eight peasant farms joined. The soil was not good, and the people lived poorly. In time, however, the collective obtained modern equipment; trained agronomists and engineers joined in; and other farmers entered the increasingly prosperous group.

Now there are 1,640 families with a total population of 3,800, of whom 2,600 are working members. Some live in modern flats in multi-family dwellings erected by the farm. Others own their own homes, mostly scattered around the large area of the collective farm, and in the village.

The collective started moving into industry some time ago, and the process has been accelerated under Andrei Kaule, who became chairman in 1974 when the former chairman retired. He told us about the farm and showed us around, aided by the secretary for cultural affairs, Deino Dzirkale, and the chief economist, Mirdza Birze.

After surviving World War II – his family was almost wholly wiped out by the nazis – Kaule was trained as an agronomist. Then he went to a higher Party school, where promising Party members are given intensive instruction in the social sciences, including a grounding in world political affairs from a Marxist-Leninist viewpoint. After that he worked for seven years as chairman of a collective farm, and then was put in charge of agricultural production for the entire Riga region before moving into his present job. In his first three years at Adazi, the gross income of the farm increased 50 percent, from 9 million to 13.6 million rubles.

The collective's "basic funds", or fixed capital, amounted to 17 million rubles. That doesn't include land, which is nationalized but which is allotted in perpetuity to the collective for its use. It does include 170 trucks, cars and other vehicles; 130 tractors; 13 combines; 16 potato harvesters; various hothouses, cattle barns and chicken houses; a fox fur farm; and its light manufacturing facilities. It also includes 3,500 head of cattle (1,100 cows) and 35,000 chickens, but does not include the value of the members' personal holdings.

In 1976 the Adazi collective obtained exceptionally good yields of 200-230 centners per hectare of potatoes and 40 centners per hectare of grain. (Ten centners equals a metric ton, and a hectare equals nearly $2^1/_2$ acres.) The yield of 40 centners of grain per hectare is nearly 60 bushels per acre – a very high yield anywhere. The farm obtained an average of 4,056 kilograms of milk per cow, one-third above the Latvian average. While that is less than half the quantity obtained on the most productive Western dairy farms, Kaule said it was a good yield for their breed of cow.

The economists gave me a production breakdown covering 13.1 million of the 13.6 million rubles gross income, almost evenly divided between farm products and industrial products.

Farm products included 1.5 million rubles worth of vegetable products, 1.1 million rubles of milk, 1.0 million of live breeding hens and eggs, and 2.1 million of polar fox and ermine furs. Note that one-third of the farm products sold consisted of this last, specialty item, rather than traditional farm products.

The manufactured goods included some processed farm products – 0.9 million rubles of wines and 1.0 million rubles of potato starch, potato chips and miscellaneous other items. However, the wine and food industries used not only fruits

and potatoes grown on the Adazi collective, but also produce purchased from other farms.

But the main manufactures – 4.4 million rubles worth – consisted of consumers goods made mainly from purchased non-farm materials: furniture, plastics, overalls and gloves. In fact, some of the products were used by the farm: in particular, plastics were used as walls and roofing of hothouses, Kaule claiming that it was superior to glass as a heat collector.

Analysis of market demand and availability of workers among the farm's residents were as important as the supply of raw materials in deciding what to do. The products chosen are flexible in relation to seasonal variations so that some workers can be released for peak harvest activity, if needed. This applies to the furniture workers, in particular. They participate in the harvest and then go back to the factory. The farm also has a lumbering operation that produces lumber for the furniture factory, for window frames and for other farm purposes.

Actually, the boundary between agricultural and non-agricultural activity is becoming indistinct as farming becomes industrialized. The new cattle-barn complex, still under construction during our visit, was a case in point. It is fully automated so that a single worker can take care of a couple of hundred cows. At the center, near the main entrance of the multi-structure, are the offices and a lounge with a decorative fountain pool, a cactus garden, and orange lounge chairs to match the trim on the walls. It is more like the executive suite of a small factory than part of a farming group.

In another part of the farm, government funds were being invested: bulldozers were at work on a drainage project to add several hundred hectares of arable land to the farm's total. This was a small part of the multi-billion-ruble per year project for developing agriculture in the central and western parts of the Soviet Union – its Non-Black Earth zones.

We saw plastic covered hothouses, and visited the installation for making potato starch and the brand new fully automatic potato chip line. The machinery was made with purchased foreign process designs (I do not have the country of origin in my notes) and included Honeywell controls. Still in the tryout stage, the farm leaders anticipated that it would be a big income producer. And we are very

willing to give a good report f the farm-manufactured brandy and preserves we sampled.

Of the 13.6 million rubles gross income, 5 million were paid in wages to the collective farm members, 750,000 rubles went for taxes, 4.4 million for material, supplies, and other expenses, and 3.4 million rubles were left as net income. Of this, 2 million rubles were allotted for construction – including the new cattle barn and a new block of 84 flats. Part of the net income is used for bonuses, which are paid every quarter in addition to a "thirteen month's wage" at the end of the year.

Of the 2,600 farm workers, 60 are specialists, including the chairman and his assistants, agronomists, veterinarians, and engineers. There are also many highly skilled workers in specialized occupations.

The average wage, including bonuses, comes to 200 rubles per month. One milkmaid made 4,854 rubles in 1976, including 1.356 in premiums; and a milkman made 5,069 rubles, including 1,069 in premiums. A tractor driver, who had visited the United States, made 4,398 rubles.

In some ways, such as the payment to farm workers only, apparently, in the form of wages and bonuses, the Adazi farm is little different from a state farm or other government enterprise. But there are differences. For example, as a cooperative, it sets its own wage scales. Thus, the Latvian government sets wage scales for furniture workers, but the Adazi farm pays its furniture workers 10-15 percent more than the scale suggested by the Council of Ministers.

Earnings of the farm members average considerably more than the earnings of workers generally. In addition there may be significant additional income from their personal plots. In Latvia, these are sizeable – $1\frac{1}{2}$ hectares. (Each Union Republic sets its own rules in this respect.) But I could not find out how important they are to the total income of the farmers. Personal plots are regarded as strictly private, so no statistics are collected, and the Chairman would make no attempt to estimate their relative importance. He did say that most of the young people refuse to bother with a personal plot, and about 30 percent of the farm's members are under 30. Generally better educated than the older generation, they may be able to earn more per hour by working on the collective farm's enterprises. And, perhaps more important, they may prefer to spend time on cultural and educa-

tional activities than on the time-consuming cultivation of a garden and the care of domestic animals.

The social consumption (those goods and services provided by society without charge) of the Adazi people is probahly higher than average, and rapidly increasing. A new centralized cultural club has 400 members, including a dance group of 50 that won honors in 1976, singing and music groups, and a string ensemble. The farm's annual budget includes 250,000 ruhles for cultural activities, as well as 100,000 ruhles for pensions, in addition to the state pensions. One-quarter of the cost of people's lunches is subsidized. Young mothers receive 40 rubles a month for a year, regardless of whether or not they return to work; and this goes up to 45 rubles for the second child, 50 for the third, etc.

During this five-year plan period, 300 new flats are being built, which will satisfy all remaining needs. Also under construction are a new kindergarten, a boiler house for central heating, and a sports base. Construction of a rest home for old people is scheduled.

At the time of our visit, 230 families, or one out of seven, owned their own cars, and 250 more were on the waiting list. Because of the advantages of life at Adazi, young people are not leaving, and much effort is devoted to their all-round development. Since 1975, the farm has not accepted new members from outside, hut only children of existing members. Apparently, this is increasingly the situation on well-run farms, especially those near large cities. Economic and living conditions are more favorable on the farms than in the city, while the city's proximity makes it accessible for cultural purposes, shopping, etc.

AND ON THE TURKISH BORDER

For thirty miles we drove south on the main road out of Yerevan, passing through one small town after another. Finally, we passed a sign indicating that we had entered the border zone with Turkey, and on a side road we saw a raised barrier gate. The main road continued southeast, into Artashat, raion center of a rich agricultural region hard up against the Turkish border.

On the right, houses fronted on the road; andbehind them was a hroad meadow, gently sloping upwards to the towering snow-capped cone, Mt. Ararat, in Turkey. It looked

as if one could just run across the fields to the base of the mountain, although the distance is really substantial. However not more than a few kilometers beyond the road flows the Araks River, the boundary between the two countries.

The valley of the Araks is a narrow belt of arable land, divided about equally between the USSR and Turkey. Of the 10 percent of Soviet Armenia that is really good for crop growing, the bulk is in this valley. The rest is mountainous land, much of it good for grazing.

In the Artashat Town Hall, we met with the leadership of the raion Party Committee and the Chairman of the Executive Committee of the raion Soviet. The region's main job, they told us, is to supply Yerevan with grapes, vegetables, melons, milk, and other agricultural produce. There are 22 collective farms and 10 state farms in the raion, with the former generally larger.

All the raion's towns and villages have hospitals and cultural centers. One-fourth of the 80,000 residents are studying full-time.

During the Tenth Five-Year Plan, gas installations will be completed and will supply cooking gas to 80 percent of the homes.

Of the 28,000 gainfully employed people in the raion, 10,000 are engaged in agriculture, 4,000 in industry, 2,500 in construction, and 11,500 in the service sphere.

Note that only 35 percent of the population are gainfully employed, as compared with 68 percent on the Adazi collective farm in Latvia. The percentage on the Adazi farm is exceptionally high, hut in Latvia as a whole more than 50 percent of the population are employed, as compared with 38 percent in Armenia. Demographic differences and traditions are involved: there is a substantially higher percentage of children and housewives in Armenia while, at the same time, we were told, 55 percent of the farm workers in the Artashat raion are women, which implies that relatively few women have non-farm jobs.

There are 3,000 members of the Communist Party, or about one in ten of the gainfully employed. However, there are 9,000 members of the Komsomol, suggesting that a very high percentage of the young people belong.

There are close to 300 agronomists, veterinarians, etc., with a higher education, and 500 specialists with a technical

secondary school education: there is a vocational school with 300 students. While most of the work has been mechanized, there is still too much manpower – or rather womanpower – employed in dairying. One big mechanized dairy complex has been completed, and three more were scheduled for early completion.

Farm output is increasing. From 30.6 million rubles in 1975, it increased to 36 million in 1976, and was scheduled to reach 50 million rubles in 1980. Correspondingly, a 25 percent increase in family incomes is projected.

At the time of our visit, the average collective farm member earned 170 rubles per month, or 2,040 per year, from collective farm work – far above the all-Union average.

In addition, the average collective farm member gets 350 rubles per year from the personal plot, mainly from the sale of grapes to the state. In large families, some members, when not working on the farm, go to the city to sell fruit and vegetables. Doubtless some of the sellers we saw at the huge bristling farmers market in Yerevan were from this area.

In Armenia, personal plots are only 0.15 hectares in size, or one-tenth as large as in Latvia, and smaller than in the Russian Federation. Presumably this reflects the relative density of population on the limited amount of arable land. However, with irrigation, fertilizer, and intensive cultivation, quite a lot can be grown even in such a small area.

Irrigation is essential in this region of limited rainfall. The Artashat raion gets a certain amount of water for irrigation from Lake Sevan, but that amount cannot be increased, and may have to be reduced in order to avoid draining the lake. So a new reservoir, built with state money, has been completed and will add 50 percent to the water supply available for irrigation.

We left the raion center to visit a leading collective farm in the raion – the Sverdlov* farm, in a village of 700 families (3,500 people). We dined at the home of the collective farm chairman, Betik Petrosyan, and later drove around to see different sections of this multi-crop farm. Certainly the fields and orchards seemed healthy, well-watered and well-cultivated. Production was quite varied – fruit trees, a large area of grape vines, many vegetables, including tomatoes. Also,

* Y. M. Sverdlov (1885-1919), a prominent leader of the Communist Party of the Soviet Union and the Soviet Government.

Petrosyan explained that on the basis of the 25th Party Congress decisions, the kolkhoz had set up a large sheep breeding farm and a huge poultry farm.

On the whole, we got the impression that this is an area of intensive cultivation with good yields and a high degree of mechanization, except for the arduous labor of grape picking. But there does not seem to be much drive toward specialization and formation of interfarm agrarian-industrial complexes.

I didn't think about it at the time, nor discuss it with my Armenian hosts, but it seems to me that the situation in Armenia is the opposite of that in the Russian Federation and Latvia. There, land is relatively plentiful, while labor is scarce; in Armenia, labor is relatively plentiful, while arable land is scarce. Hence the emphasis is on getting the maximum out of each hectare of land, through intensive cultivation, rather than from each worker.

THE TEA PLANTATION

We visited the northernmost tea plantation in the world, in the hills above Dagomys, just north of Sochi on the Black Sea coast. It's just below the 44 degree latitude line, parallel with Portland, Maine and Milwaukee, Wisconsin. The tea plantation is also a tourist stop where, for the fee of 5 rubles, you are served tea and various delicious jams.

The USSR has no really tropical areas, and only small sub-tropical areas south of the Caucasus. But the Russians are traditional tea drinkers. Before the Revolution, virtually all their tea was imported from the Far East, but the Soviet Government has worked successfully to produce most of its own requirements. Production has increased more than 100 times since 1913, and more than 7 times since 1940. Almost all of the tea is produced in Soviet Georgia, with small amounts grown in Azerbaijan and the Russian Federation. The Dagomys state farm is one of the few producers of "Russian tea" (as distinguished from Georgian or Azerbaijanian tea).

Temperature data indicate why Dagomys is the most northern tea sovkhoz. The tea plants can survive a temperature as low as –15 degrees Centigrade. The lowest temperature normally registered at the Dagomys plantation is –12 degrees, and "once every hundred years" it gets down to –15 degrees,

never to – 16 degrees. Perhaps plant selectionists will breed a tea plant that can survive even colder winters!

Dagomys is one of the few tea plantations in the Russian Fedaration and, I believe, the largest as well as the northernmost. It has 700 hectares in tea, 400 in orchards and 300 in nuts. But tea is the key crop, and the tea bushes are beautifully kept.

Because of inadequate rainfall, summer irrigation is necessary, with water pumped uphill 300 meters from a river. Picking is possible only five months in the year, as compared with year-round picking in India.

The 2,000 people who work on the farm average 134 rubles a month, close to the average for state farm workers in the USSR. Tea pickers are paid 25 kopecks per kilogram, and the average pick is 50-60 kilograms per day, with the best workers getting 100. According to these data, an average picker, working 22 days a month, would get around 300 rubles. I imagine many of the pickers work off the farm on construction sites, Sochi service establishments, etc., during the 7 months when picking isn't possible.

The director gave us price and cost data. Good quality tea sells in Soviet stores at 46-48 kopecks per 50 grams, comparable to U.S. retail prices for good quality tea. Allowing for the cost of processing, packaging, transport, retailing, and a modest turnover tax, the prices received by the farm for their tea seem adequate.

In the face of the natural handicaps, the success of the Soviet Union in expanding tea production to meet most of its needs must be regarded as one of the significant achievements of Soviet agriculture.

POLICY MILESTONES

Major changes in agricultural policy were made after the March 1965 Plenum of the Central Committee of the Communist Party of the Soviet Union, including revised administrative structures, increased payments to farmers, and a very rapid increase in capital investments in agriculture. Subsequent plenums have given major attention to agriculture, also. A plenum devoted solety to agriculture was held in July 1978.

President Brezhnev, in his keynote speech, noted that farm output had increased 40 percent and livestock output 45 percent in the years 1971-77 as compared with the seven

years 1958-65. Also, over a twelve-year period, labor remuneration of collective farmers had gone up by 100 percent and of state farm workers by 90 percent. While the periods are not exactly comparable, the figures do rather accurately reflect an increase in payment to farmers of about one-third, per unit of production.

Brezhnev's long speech – the English translation occupies 38 single-spaced, densely printed mimeographed pages – reveals the extreme complexity of the problems that have to be dealt with in Soviet agriculture. In the current Soviet style, more space is devoted to criticizing shortcomings than to reviewing past accomplishments. And still more is devoted to outliving particular steps and general directions that have to be taken. Many of the proposals coincide with directions of development explained to us by Soviet agricultural research specialists.

Major emphasis was given to increasing production of livestock products. Brezhnev said:

"The growth of public welfare in recent times has brought about an increased demand precisely for livestock products ... in spite of a noticeable increase in the production of meat, milk, and other products the present level of development of livestock farming does not meet the swiftly growing requirements." ("On the Further Development of USSR Agriculture", *Moscow News*, July 8, 1978, p. 4.)

Brezhnev, while noting an earlier decision already being executed to double the output of poultry meat, gives priority to increasing output of beef. This might seem strange, in view of the calculations mentioned earlier in this chapter showing that beef requires much more feed per unit of weight than pork or poultry. But Brezhnev referred to two factors which offset this:

The people demand beef, and certain specific features of feed resources and natural conditions are favorable for beef raising. The first point is of particular interest. In keeping with the basic economic law of socialism – priority for the constantly increasing needs of the people – some decisions have to be made which contradict narrow technical calculations. But the specific features mentioned by Brezhnev are also relevant: accessibility to extensive pastures over which hogs or chickens, for example, could not roam may compensate for the relatively low rate of conversion of feed into meat by cattle. More pastures are being made available through drainage

of swampy lands, and improved, high-protein grasses will be planted. In addition, emphasis is placed on construction of large interfarm feedlots where cattle will be fattened with high-protein-content feed mixes, which should substantially raise the feed-conversion ratio for cattle.

A number of Soviet economists have published analyses claiming that prices paid farmers for milk provided little or no profit margin, which caused many farms to neglect requests to increase milk output. To deal with this and similar problems, the Plenum decided to increase prices paid for milk, wool, mutton, potatoes, and some kinds of vegetables, beginning in 1979, by a total of 3.2 billion rubles, annualized, *without changing retail prices*. I estimate that the increases will average about 15 percent. The practice of raising farm prices without raising retail prices goes back to 1965, and has resulted in increasing subsidization of food consumption. It also tends to equalize real income distribution among the population.

This new Soviet decision follows by a few months a U.S. Government increase in the price of milk paid to farmers in a way that resulted in much larger increases in retail prices of milk and other dairy products. This is a rather typical example of the different social orientations of the two systems.

The Plenum decided on other benefits to farmers, including an increase in the number of collective farms exempt from income tax, the writing off of 7.2 billion rubles of debts incurred in the drought years 1972 and 1975, and the deferral of another 4 billion for 12 years. Beginning in 1980 minimum pensions of collective farmers will be raised 40 percent; and during the Eleventh Five-Year Plan period to follow, farmers' pensions will be raised to the level of workers'.

These measures, taken together with the results of increasing farm productivity, will come close, I should think, to completing the equalization of farmers' and non-farm workers' incomes, while coinciding with a further marked narrowing of the remaining organizational and economic differences between collective and state farms.

Sometimes increases in wages or in farm prices have little stimulating value economically, because they are not logically tied in with improvements in productivity of the recipients.

The decision of the CPSU Plenum of the Central Committee stressed that measures taken in the field of agricultural economics "must promote the unity of interests of the state, collective farms and immediate producers, serve as an active factor in the growth of labor productivity." ... "Further improvements must be made in the system of incentives for the farms with high performance in the production and sale of agricultural products to the state ... the USSR Council of Ministers is to be asked to work out specific proposals on this subject in cooperation with local bodies and research establishments and submit them to the political Bureau of the Central Committee within a year. At the same time, it is necessary to work out additional measures to bring the material incentives for state farm workers and collective farmers into closer relation with their work performance and effective use of production assets and material resources. The bonus system for rewarding farm managers and specialists must be improved." (*Pravda*, July 5, 1978.)

The fact that the government bodies are given a year to work out concrete proposals is indicative of the complexity of this task. It's an extremely knotty problem, the solution of which is necessary to reveal fully the advantages of socialism over capitalism as a social system.

Chapter VI

LIVING STANDARDS

THE OVERALL SITUATION

Article 10 of the Soviet Constitution states: "The foundation of the economic system of the USSR is socialist ownership of the means of production in the form of state property (belonging to all the people), and collective farm-and-co-operative property... No one has the right to use socialist property for personal gain or other selfish ends."

Article 15 of the Soviet Constitution states:

"The supreme goal of social production under socialism is the fullest possible satisfaction of the people's growing material, and cultural and intellectual requirements.

"Relying on the creative initiative of the working people, socialist emulation, and scientific and technological progress, and by improving the forms and methods of economic management, the state ensures growth of the productivity of labor, raising of the effieiency of production and of the quality of work, and dynamic, planned, proportionate development of the economy."

Socialism is the first society in history to proclaim that raising the living standards of all the people is the prime objective of its economic activity. And there are other features worth noting: the inclusion of cultural and intellectual requirements in the definition of living standards, on a par with material requirements; the concept of continuous progress in the reference to "growing" requirements; recognition that the aim is to get closer and closer to the always advancing target – "fullest possible" satisfaction.

The article further affirms the organic unity of production and consumption under socialism, and the bases on which society relies for achieving the rise in production. Recognition of the need to increase production and productivity is not unique for socialism: capitalist government officials and business executives stress the same theme.

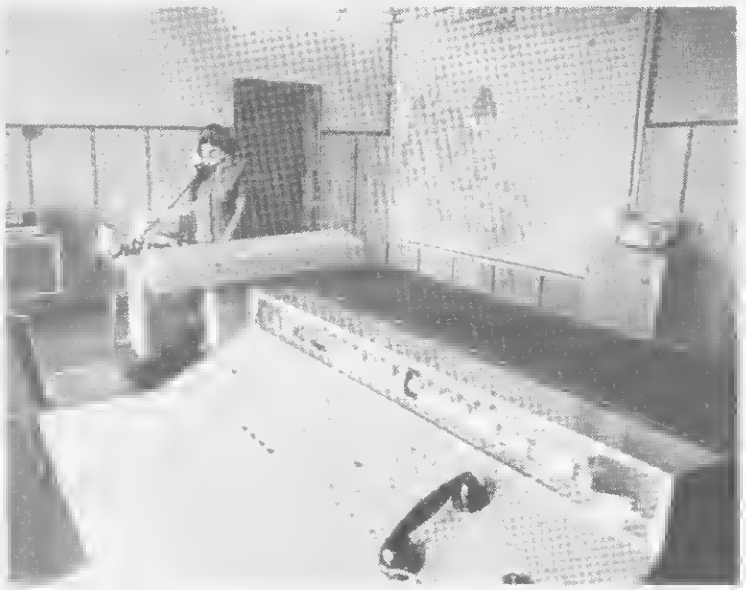
Yuri Fein, Deputy Chief of the main Tyumen Oil and Gas Administration (Glavtyumenneftegaz) and Naryan Kulakhmetov, Deputy Director of the West Siberian Experimental Geological Exploratory Institute

Surgut is a city of trucks–big trucks, little trucks, giant two-cab trucks–in a steady stream in and out of town

Surgut is surrounded by swamps. Indeed, 75 per cent of the West Siberian oil and gas area is inhospitable marshland, and the construction of a large, modern city on this terrain is a tribute to Soviet ingenuity and persistence

Nizhnevartovsk is an oilmen's town

The author with engineer Rifkat Ibragimov, shift foreman of the top drilling team of a "bush" at Samotlor



Delivering trucks and freights to Siberian building jobs

The computer center of the oil and gas research institute in Tyumen

Central operations room for all the oilfields at Lake Samotlor

Krasny Prospekt (Red Avenue), the main thoroughfare of Novosibirsk

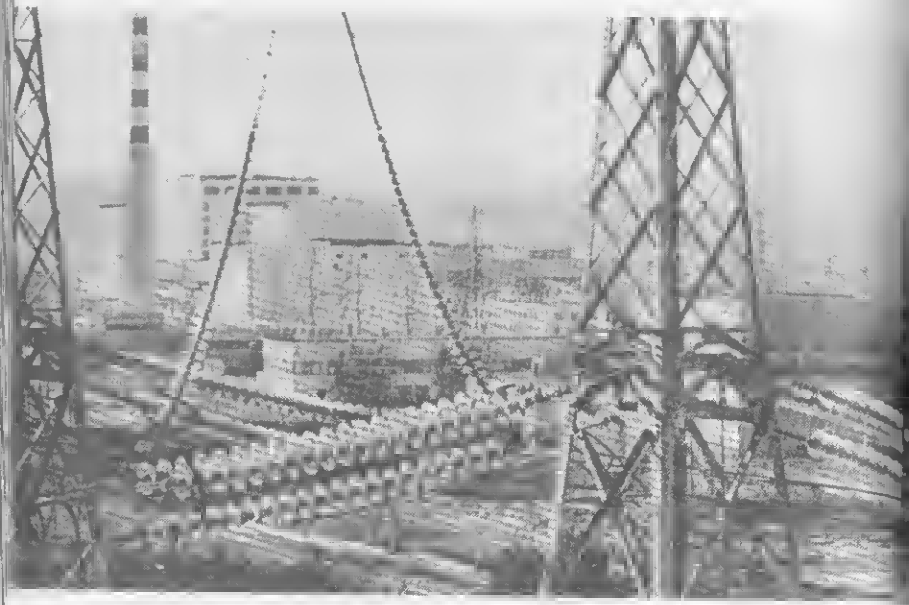
Prospekt Nauki (Science Avenue) in Akademgorodok, the science town of Novosibirsk

The Opera House in Novosibirsk

A lesson in a senior class in School No. 4 in Nizhnevartovsk

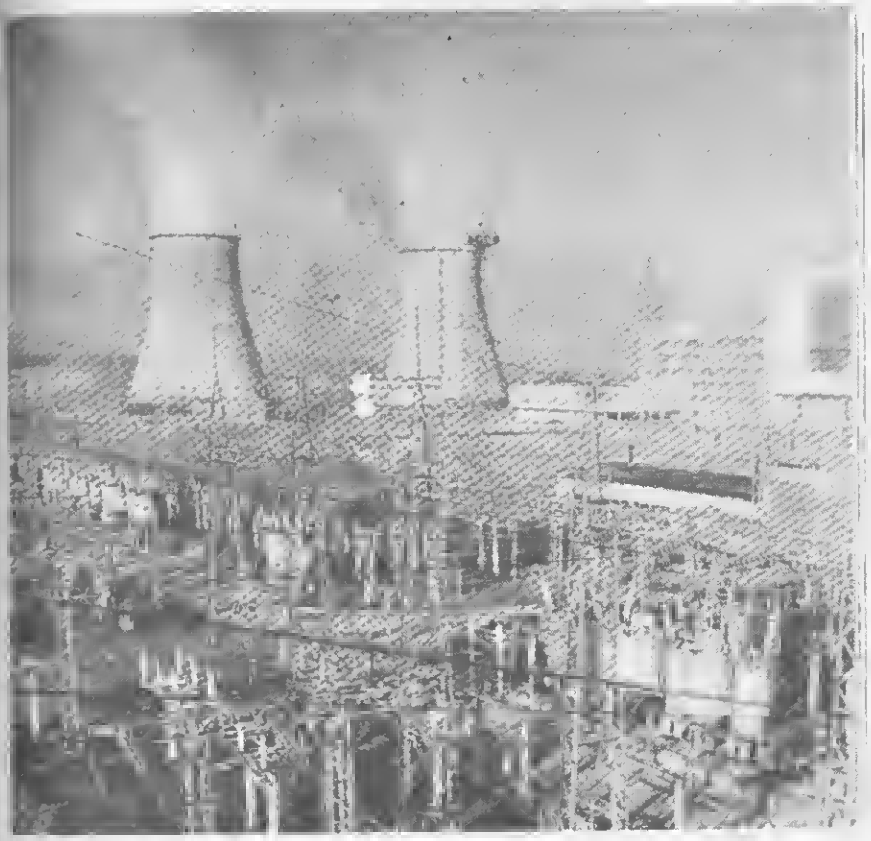
Director Fyodor Ovchinnikov briefing Victor and Ellen Perlo in the board room of the Novovoronezh nuclear power plant

Galina Ruzankina, machine operator, member of the oblast trade union council, member of the Novosibirsk City Soviet and a delegate to the 25th Party Congress



The Novovoronezh nuclear power plant

The Scientists Club in Akademgorodok



The Riga No. 2 power plant, one of the most important projects of the Tenth Five-Year Plan

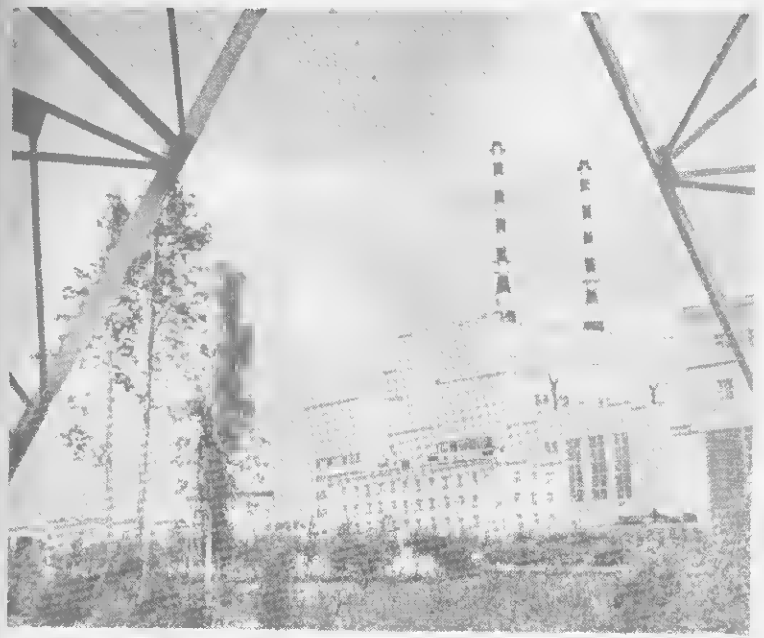
The control and computerized panel of the fourth unit of the Novovoronezh power plant

The central control room of the USSR's North-Western Power Grid

The Leningrad nuclear power plant

The Krasnoyarsk Dam and power plant

Sayat-Novy Avenue in Yerevan, the capital of Soviet Armenia



The Beloyarsk nuclear power plant

Rema Svetlova, Vice-Chairman of the Council of Ministers of Armenia

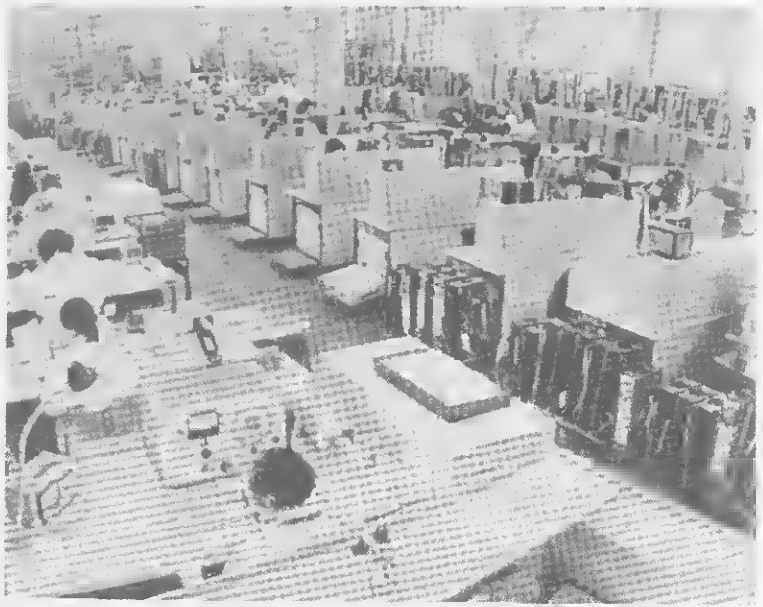
The farmers' market in Yerevan: everything delectable was there in great quantity

A children's art museum in Armenia

When spring comes in Kirovakan (Armenia) the kids get ready for the annual pavement-drawing competition in Central Park

Professor Dr. Gunnar Cipens, Director of the Institute of Organic Synthesis of the Latvian Academy of Sciences (left), with Guna Jacobson, his assistant (centre), and Dr. Jan Stradins, outstanding organic chemist

Riga, the capital of Soviet Latvia, as it looks today

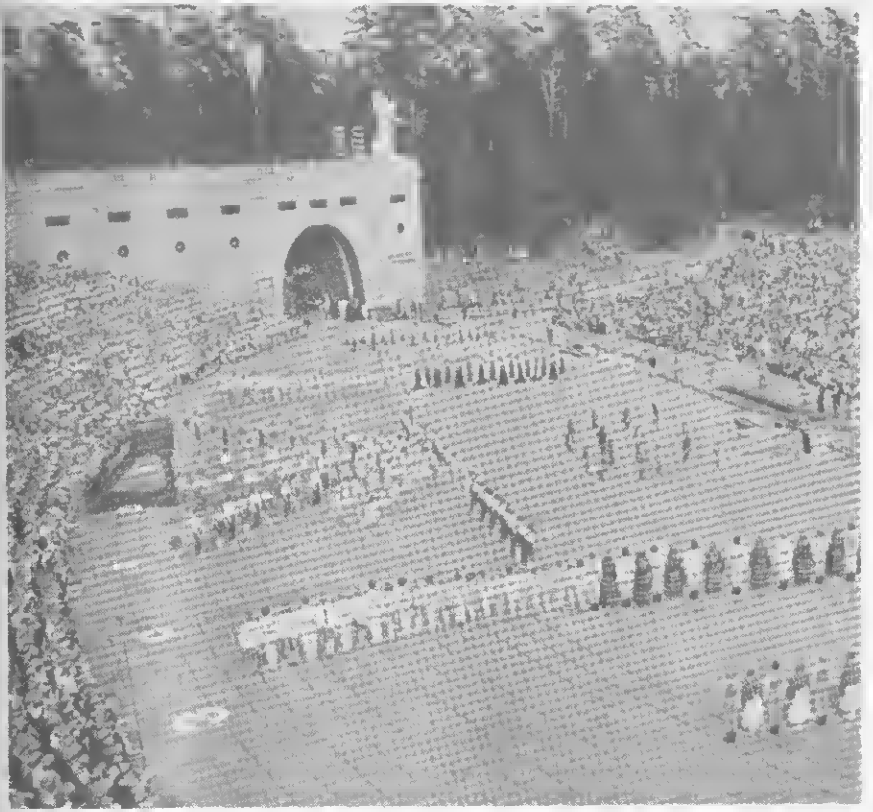


The 'Rigas Modes' home services and facilities center

The assembly line in the Riga Radio Factory

One of the factory's products–the Melodia-106 stereo record player

Riga's young Violinists give a public performance



The famous folk dance festival in the Riga Recreation Park

Increase in Real Income

The planned increase in real income in the USSR for 1976-1980. Drawing for *Soviet Life*

The Jurmala Hotel on Iomas Avenue in the Latvian seaside resort of Jurmala

N. S. Patolichev, USSR Minister of Foreign Trade, meets with Reginald H. Jones, Chairman of General Electric Co

But there are a number of factors that represent a principled difference from capitalism, the foremost being the "creative initiative of the working people". That aspect doesn't enter at all into the capitalist's perspective.

Then there is the replacement of capitalist competition with socialist emulation, a new form of competition in which there are no losers, only winners. Also, under socialism there is the key role of the state in supervising and planning the entire economy, in contrast to the situation in capitalist countries where there is the constant contradiction between the capitalists' demands for specific forms of state intervention in the economy and their demands for the state not to interfere in their business.

Finally, there is the principle of dynamic, planned, proportionate development of the economy. Capitalist economists once assumed that the self-interest of individuals would cause economic activity to fall into some sort of proportionality, but the increasing instability of capitalism has caused the collapse of the theory of the "unseen hand".

Other articles of the Soviet Constitution deal with specific features of better living standards. Article 21 deals with improved working conditions, including the reduction and ultimate elimination of arduous physical labor; Article 23 deals with raising wages and real income through increases in productivity and through providing and distributing social consumption funds; Article 24 is concerned with health protection, trade and services; Article 25 is devoted to education; and Article 27 deals with cultural facilities.

Capitalist propagandists stress the inferiority of average personal consumption standards in the Soviet Union compared with those in the United States. These comparisons are usually crudely biased, and any comparison between these two countries on a one-to-one basis must take into consideration the historic, geographic, size and time factors as well as the economic and social base of the current societies. Comparison of the Soviet Union with any other country in the world that was on the same economic and societal level at the time of the Great October Revolution would give a more accurate picture of the advantages of a socialist social system.

Nevertheless, it is true that per capita consumption in the USSR is still considerably less than that in the United States. Soviet specialists themselves estimate that per capita consumption in the USSR, using reasonably appropriate pric-

ing systems, is not much more than half that in the United States.

But Soviet economists stress the DYNAMIC comparison of living standards – where they are coming from and where they are going. The fact is that in periods of peace, the Soviet Union achieved a pace and steadiness of increase in mass living standards that no capitalist society has matched.

According to the official figures of both countries, between 1940 and 1976, real per capita income in the USSR increased 5.1 times, while in the United States it increased 2.2 times. At a compound annual rate, the increase was 4.6 per cent in the Soviet Union and 2.3 percent in the United States. That is, the Soviet rate of increase was twice that of the U.S. rate. Moreover, this was accomplished despite the tremendous reduction in Soviet living standards during World War II while, in the U.S., which suffered no wartime destruction, the activation of idle capacity and manpower resulted in an increase in living standards.

If we figure that the Soviet Union regained its prewar level of living standards by 1950, then the annual per capita increase in real income in the Soviet Union becomes 6.5 percent. During the same period, the annual compound rate of increase in the United States was 2.1 percent, or one-third as fast. (*SSSR v Tsifrakh*, 1976, p. 192; *Economic Report of the President*, 1977, p. 213.)

CIA statisticians specialize in "correcting" Soviet statistics downward ... to show a slower rate of increase in real per capita income. Thus, Gertrude E. Schroeder and Barbara S. Severin, in a compendium of papers published by the Congressional Joint Economic Committee, estimated that real per capita income in the USSR increased "only" 4.0 percent per year between 1950 and 1975, and that was after reducing by 0.4 percent per year the previous CIA estimates. (U.S. Congress, Joint Economic Committee, *Soviet Economy in a New Perspective*, October 1976, p. 621.)

However, even those CIA watered-down figures show a real per capita income growth rate for the USSR that is twice that published by the U.S. Government for the United States!

The validity of rising Soviet living conditions is confirmed by an unusual source – *The New York Times* Moscow correspondent, David K. Shipler. Unusual? Because *The New York Times* specializes in downtalking the Soviet economy, with just enough recognition of the positive to preserve its credibility to the moderately informed reader.

In its annual *International Economic Survey* published early in 1978, a feature article headlined "From Moscow to Murmansk, Now Quite a Consumers' Paradise" conveyed the tone:

"A recent gleaning of Soviet opinion ... found that 'everybody is complaining, and everybody is happy.'...The intelligence came from a piece of highly unusual research: a Muscovite spend hours sitting in saunas at a Black Sea resort talking with men from throughout the country.

"Those from Omsk and Tomsk complained about air pollution. Those from Murmansk criticized the shortage of meat. But they all had decent apartments and steady jobs. Their children went to acceptable schools and life had none of the risk and uncertainty that seemed to them prevalent in the United States.

"The Soviet economy is not exactly booming... *But overall, the official* PRONOUNCEMENTS OF RISING LIVING STANDARDS SEEM TO COINCIDE WITH WHAT CAN BE SEEN BY FOREIGNERS". (My emphasis – *V.P.*)

The journalist speculates that there may be poverty in some rural areas off-limits to foreigners. "Elsewhere, however, high-rise apartments are shooting up.... The private auto is gaining in the cities, and clothes have improved in quality and style. More families have refrigerators ... washing machines and television sets". (*The New York Times*, May 2, 1978.)

Intentionally or not, Shipler conveys a sense of the exceptional pace of progress in living standards, although he tries to compensate by overbalancing this with more extensive descriptions of shortcomings and does not mention many of the strong points of Soviet living standards.

It is important, in considering this question of living standards in the USSR, to evaluate the effect of changes in the distribution of income. In the decade immediately following the Revolution, the incomes of working people increased by 20 percent as a whole at the expense of the former exploiting classes. But, of course, this redistribution started from a level greatly reduced from even its normal, very low, pre-World War I point as a result of the wartime destruction and disruption of production and of the wars of intervention against the Revolution.

There has been a further reduction of income inequalities in the Soviet Union since World War II, while in the United States, on the contrary, there has been a visible tendency in recent years for a widening gap between capitalists and workers, between white and Black–an increasing concentration of income, and especially of wealth, in a narrow upper crust. The appropriation of a substantial part of the total personal income by the capitalist class is a significant factor in the U.S. income picture.

If, for example, we say that real per capita income in the Soviet Union is 55 percent of the U.S. level overall, than it would be reasonable to say that the real per capita income of working people in the USSR is about 65 percent that of workers in the United States.

NO INFLATION!

Inflation is the banc of existence of most of the population in capitalist countries. U.S. polls show it to be the main concern of the people by a wide margin. No capitalist government has found the solution to the situation, and on the whole the situation gets worse and worse. But there's one country where living costs are lower than 30 years ago, and staying down!

Fundamentally, the planning system, by balancing peoples' incomes with the supply of consumers goods and services, makes stable prices possible... And direct government controls of prices of state-sold goods insures it.

Inflation in the Soviet Union was limited to war periods, and Soviet inflation was considerably less severe than in some Western countries suffering much less war damage in World War II. But after World War II, when inflation continued and later worsened in the West, it was actually reversed in the USSR. Prices were sharply reduced in the early 1950s, by an average of 25 percent, to a level only 39 percent above that of 1940. And they have stayed there ever since.

There are occasional changes in specific prices, but increases are balanced with decreases. Thus, between 1970 and 1976 prices of fish, vegetables and alcoholic beverages were increased, while prices of clothing, tv sets and some other durable goods were decreased. (*Narodnoye Khozaistvo SSSR za 60 Let*, pp. 555-556.)

Great efforts are made to hold down prices of prime necessities, even when world market prices or domestic wholesale prices increase. Thus, to stimulate agriculture the Soviet Government has increased purchasing prices paid for farm products several times during the last two decades. But retail food prices have been kept essentially stable, through increasing government subsidies. Subsidies to hold down the prices of meat and dairy products alone total 20 billion rubles a year, exceeding the defence budget spending. (A. Komin, Deputy Chairman, State Committee on Prices, in *Agitator*, No. 10, 1978.)

Fundamentally, only the prices on the collective farm markets fluctuate freely according to supply and demand. These markets now account for less than 5 percent of all food sales, at prices which have fluctuated in recent years, on the average, between 50 percent and 90 percent above the fixed state prices. (*Narodnoye Khozaistvo SSSR za 60 Let*, pp. 535-536.)

According to Soviet friends, the stability of prices is one of the features of life most valued by the public. One friend, with experience of occasional shortages in a Siberian city, says people standing on line on such occasions disagree sharply when asked if they would be willing to pay higher prices if they did not have to stand on line.

Yes, there is some "creeping inflation", when higher quality goods are introduced at higher prices, displacing old, inferior lines. Such increases are not counted in either the Soviet or the U.S. consumer price indexes. But in the Soviet system, unlike that in the U.S., later, when the prices of the higher quality goods are cut back to the original level, that is not counted as a decrease in the index either. (*Narodnoye Khozaistvo SSSR, 1969.*, p. 829.)

But in the total scheme of things, this creeping inflation cannot amount to more than one or two percent per year, and people are getting a better standard of living for it.

Now let's look at the progress of Soviet living standards in consumption of major groups of commodities and services:

FOOD

In Czarist Russia the poor peasants and most other workers subsisted on the barest diet in *normal* times. For

the majority of Russians, bread and potatoes were the main components of the diet. Malnutrition was the rule and starvation the fate of millions in those regions where acute droughts or other crop failures occurred – especially in the far-flung non-Russian vassal states, where conditions were immeasurably worse.

Today, the entire Soviet population has a more than ample diet in terms of calories.

To observers who have visited the Soviet Union several times, it is clear that the food supply is increasing in variety and availability, but supply is still irregular with respect to some items.

However, the Soviet Union is not blessed with substantial semi-tropical and tropical areas such as the United States has in its Southwest, Florida, and Hawaii. Nor does the USSR have such access to the year-round crops of countries like Mexico, which is in a position of financial dependence on U.S. capital and is compelled to trade with the United States on unequal terms. Much of Mexico's commercial agriculture is owned or controlled by U.S. capital, and the United States obtains 40 percent of its winter produce from Mexico.

So in the Soviet Union fresh fruits and vegetables generally remain seasonal.

Significant progress has been made to improve this situation. In addition to large-scale planting of fruit trees in the Ukraine and other southern areas, there is a major program of constructing green houses in all parts of the USSR, but especially near large cities. We saw miles of these structures near Leningrad and Moscow. And, in addition, as the international trading capacity of the Soviet Union increases, more foreign currency is spent for the purchase of tropical produce.

For example, there is much more coffee available than formerly. Then, in June 1977, while we were in Moscow, a shipment of oranges from Morocco arrived and they were available in the stores. The first day, people lined up to buy them. There seemed to be no restrictions, and many purchasers carried away large sacks of the fruit. But day after day, all week, they were on sale, and by the third day people were buying them just as casually as any other product.

Well, I thought, Moscow must be favored in food distribution – as reported in capitalist papers. However, I had occasion that week to go to Voronezh, an oblast capital that is not particularly metropolitan. But there also people were walking out of stores with bags of oranges.

The farmers' market in Yerevan was a cornucopia of produce of all kinds. Of course, Armenia is a lush prowing area, and we were there in the late spring when everything green and growing was available in quantity. As we threaded our way through the crowds of buyers and white-garbed sellers, the closing bell clanged. The pace of trading became quite frantic – although we learned that the signal gave a one-hour warning. So we had ample time to buy *lavash* (the paper thin sheet of breadstuff), tomatoes, cucumbers, scallions, radishes, several kinds of Armenian grasses (aromatic and piquant), carrots, cheese, strawberries and cherries – topped off by an orange for each of us. Supplemented with coffee from the hotel restaurant, we really had a feast in our suite that evening, the four of us, for very few rubles.

A year-round supply of all kinds of foods is a desirable luxury, but it is hardly requisite for adequate and varied diets. And malicious journalists use the ploy of picking on a particular unavailable item to give the impression of a poor food situation. For example, in two consecutive stories about the Surgut area, *The New York Times* correspondent told of a drilling foreman who said the meat shortage was worse than the year before – although in one of the stories he conceded that the shops seemed adequately supplied with canned meat and vegetables. But UPI correspondent Charles Madigan, on the same trip, reported that Surgut's major hotel "had what appeared to be an endless supply of fruits, cranberry juice and other foodstuffs that are often hard to get elsewhere in the country". (*The New York Times*, January 31, 1978, p. 6; *Daily World*, January 31, 1978, p. 10.)

When we were in Surgut, we didn't check out the foodstores, but can personally testify to the variety, quantity and quality of the fish the people of Surgut take from the wide River Ob, as well as from the various lakes of the region. No wonder, as Shipler says, "Men usually list hunting and fishing in the surrounding wilderness among their favorite pastimes".

And it is important to remember that a shortage of red

meat in a retail shop does not mean that people–even without hunters in the family–go without. Because the factory and school cafeterias and restaurants provide the main meal of the day for a large part of the Soviet people, and these establishments are supplied with foodstuffs before the retail stores.

In Riga, we went in to see one of the cafeterias in the large radio factory. To handle the several thousand workers, there were a number of cafeterias and several shifts. Through closed-circuit television, the restaurant manager could see where lines were getting long and, via a loud-speaker system, advise workers which cafeteria to use for the shortest wait.

On the wall near the entrance to the dining hall, three different menus for the next day were posted. Workers were asked to specify which they preferred so as to guide the cooks in the amount of each to prepare. Two of the three complete dinners scheduled for the following noon offered the following:

Combination No. 2 consisted of soup with croutons, beef strogonoff with garnishes, milk custard with whipped cream, accompanying garnishes and bread–all for 60 kopecks.

Combination No. 3 consisted of pickles, okroshka soup with meat, escalop (a cut of meat) with garnishes, lemon drink, accompanying garnishes and bread–for 70 kopecks.

But even at that, workers were not limited to a choice of one of the three posted. A special cafeteria provided meals for workers with dietary problems or for those who preferred to pick and choose from an a la carte selection. And further, considering that workers from some scores of nationalities were employed at the factory, meals were also provided to conform with several national preferences–Georgian, Uzbek, etc.

Although we arrived after the lunch hour and couldn't join the workers in the large, bright and airy cafeteria to see its operation, the main course we were served in the executive dining room was the same. Of course, as we were guests, the varied *zakuski* (appetizers), powerful potables, and delectable desserts were an added attraction. But nonetheless, we could not help speculating on what the unadorned meal would have cost a U.S. worker even if it were available in the place of work.

HOUSING

Each year about 2.25 million new housing units are built in the Soviet Union. In the 20-year period from 1956-1975, a total of 45.4 million units were built, which means that just about the entire population of the USSR was rehoused during that period–either by moving into new apartments or houses, or moving into larger and better quarters in older dwellings vacated by previous occupants. (*Narodnoye Khozaistvo SSSR, 1975*, . 571.)

In the same 20 years, 30,512,000 units were constructed in the United States. (*Economic Report of the President 1977*, p. 214, with added estimated allowance for farm housing for 1956-1958 when official statistics did not give farm housing.)

Thus, 50 percent more housing units were built in the Soviet Union where, in terms of the number of persons housed, there was the largest, most sustained housing construction boom anywhere.

However, since the average housing unit in the United States is larger than in the Soviet Union, an exact comparison is difficult. Approximate calculations indicate that in total floor space constructed during the 20-year period, the United States was somewhat ahead. But since average U.S. housing area figures include the great number of large single-family houses of the affluent, statistics do not reveal the amount of actual housing built for workers in the United States, or the amount of floor space they have.

In the 25 years since 1950, total urban housing space multiplied 3.63 times in the USSR, more than keeping up with an urban population that grew 2.15 times. The useful living space per person increased from 7 sq m to 11.9 sq m, a gain of 70 percent, and the qualitative gain was much greater. In 1950 the great majority of urban families were sharing kitchen and bathroom facilities with one or several other families. Now the great majority have their own kitchen and baths. Also, gas or electric stoves and hot and cold running water, along with all sanitary facilities, have become standard in the cities and are being installed more and more rapidly on the farms.

There's another feature: about two-thirds of the urban housing in the Soviet Union is owned by the state or by cooperatives and is distributed according to need. Since rent

is minimal, this means that even people at the lowest income level have access to good public housing. Whereas in 1975, there were only 1.18 million low rent public housing units in the United States, and new construction of such units are at a rate of only about 30,000-40,000 per year. The supply is adequate for only a small fraction – one-tenth or fewer – of the low income families barred from high-cost private housing because of financial difficulties or racist exclusion.

And in U.S. public housing the rent is only "low" compared to typical extortionate rentals. Generally rent takes 25 percent or more of the income of residents, compared with 3-5 percent in the Soviet Union.

As to quality, housing construction in the Soviet Union has improved but is still generally below the standard in East European socialist countries or of average apartments in the United States. Much low-cost housing construction in the United States is very shoddy and unsubstantial, disintegrating in a very few years.

In the USSR, there is considerable variation. New housing everywhere is architecturally immeasurably superior to that of the 1960s, and in Moscow and Novosibirsk, where we visited apartments, the quality seemed much improved also. The hotel in Jurmala, near Riga in Latvia, was well designed and well constructed. In Yerevan, Armenia, architecturally the buildings were most attractive, with much use of basic earth colors and striking mosaic murals, inside and out. But there were cracks and even holes in the corridor walls of the one-year old apartment house we visited.

Plumbing, generally, continues to be troublesome. Why?

The State Committee on Prices sets the rate for services as well as for commodities. Academician Khachaturov explains it as follows:

The prices set by the Committee for plumbing work – say for installation of standard bathrooms – are set at levels which contracting organizations regard as relatively unprofitable. So they skimp on the work.

If this is recognized, one wonders, why aren't prices adjusted accordingly? The Soviet press carries many critical articles, by people involved, of new enterprises or housing estates that suffer from poor or delayed finishing processes.

One difficulty seems to be the practice, on construction jobs, of payment for work-in-progress. There have been

proposals and decisions to limit and control payments to construction organizations while work is in progress, to withhold a significant portion of the total payment until the entire job is completed and inspected for quality. But these decisions, apparently, have not been sufficiently conclusive or effective. Moreover, there does not appear to be anything equivalent to a guarantee period, during which any deterioration would require prompt repair or replacement and impose financial penalties on the responsible personnel of the contracting combines.

Imposing financial penalties or limits on socialist construction firms presents special difficulties, as the payments virtually all go to meet payrolls or costs of supplies. However, the Soviet Stroibank (Construction Bank) does have a system of credits that can be used for payroll purposes. Undoubtedly the technical problem can be solved given a firm determination to base financial rewards and status of the responsible managerial personnel decisively on the completion of contracts on time and of good quality.

Khachaturov writes that in 1969 a decision was made to put construction organizations on a self-sustaining basis and to establish material incentive funds similar to those of industrial enterprises. This has been implemented to some extent in the case of larger contractors, but apparently not yet on a sufficiently comprehensive industrywide scale, at least in all regions, to make a decisive improvement in the quality and timely completion of construction projects. (Khachaturov, *The Soviet Economy Today*, pp. 306-7.)

Currently, there is a big drive for brigades of workers (normally a brigade may number from 4 to 10 workers) to contract to do a certain job within a major construction project within a certain time for an agreed sum of money. This has a potential for speeding up consruction, but not in itself for improving quality, unless payment to the brigades is made contingent on quality control over their work. According to press reports, this is the case in at least some situations.

The Soviet people have leapfrogged over Western countries in the benefits to be gained from city planning. Residential areas are built apart from polluting industrial areas, separated by green belts but sufficiently close for easy commuting. These residential areas are planned as self-contained complexes, with stores, service establishments, schools, and medical

centers within convenient walking distance. These complexes are part of rational and often innovative citywide plans, which give prominence to environmental protection and improvement, to providing cultural and recreational facilities.

Here's an example of a new project going up in Moscow:

"Northern Chertanovo, a new residential area of Moscow, is now a huge construction site ... it will become a model neighborhood ... with a population of 20,000. Perhaps the most remarkable feature ... is that it will have no surface traffic–transport arteries will be built underground".

The main traffic artery will be a tunnel: "On either side of the tunnel there will be underground roads leading to blocks of flats and the shopping center. The surface will thus be used only by pedestrians. Most of the surface area will be taken by orchards, public gardens and sport grounds.

"There will be underground parking lots, and underground garages built into tunnel walls sufficient for one car for every two families ... discharge gas will flow by hermetically sealed pipes to the roofs of the buildings."

Garbage will go down shafts and be pumped through underground conduits to a garbage removal station, where it will be compressed and taken in special containers outside the area. (M. Ripinskaya in *Sotsialisticheskaya Industria*, January 11, 1978, APN abridged version.)

The So iet Union has also pioneered in constructing liveable cities in the Arctic North, including, as the latest development, whole complexes of urban areas roofed over for protection from the extreme cold and wind of the far northern Siberian winter.

COMMODITIES

The past twelve years have seen an especially rapid growth in the supply of standard consumers durable goods.

The proportion of families with TV sets increased from 24 percent in 1965 to 79 percent in 1977; refrigerators, from 11 to 73 percent and washing machines from 21 to 69 percent (*SSSR v Tsifrakh*, 1976, p. 207, *Planovoye Khozaistvo*, No. 5, 1978, p. 24.)

Quality is improving also, as we could see when we compared refrigerators now on sale with those we saw in apartments during the 1960s. More and more of the TV sets have color: electric vacuum cleaners are also becoming more common; and on sale to the public are other, more expensive items such as air conditioners and home freezers. Phonographs and radio-phonograph combinations have been readily available at least since 1960.

In Yerevan we went into a department store. Modern and very attractive from the outside–the front plaza featured an array of sparkling fountains–we were impressed with the variety of items available. The first floor was devoted to household and variety items, sports equipment and footgear. Refrigerators and other big ticket items were on display, in different sizes, for spot sale–not merely as demonstrators. We looked for smaller household electrical appliances and saw toasters, coffee grinders, electric kettles, etc. There were all kinds of dishes and pots and pans, hardware, stationery, plastic containers, kitchen utensils. We priced items and they were not out of line with what we pay (or paid, before inflation here) for comparable goods and quality.

Tennis rackets, according to our notes, were 8 rubles 40 kopecks. That was with strings. They were by no means top of the line in quality, but for beginners, a very good buy.

And Ellen bas entered in her journal-notebook: "Marvelous very large shallow enamel pan, round, perfect for paella, for 2 R 20 K (about $3)–if only I could get it home!"

Actually we had hoped to return by boat, but the sailing schedule made it impracticable. If we had, many sucb bargains would have been purchased in Soviet stores–and we would have been able to take with us the huge number of books we purchased and were given as gifts.

Western critics of the Soviet economy have long dwelled on shortages of everyday items–the long waits for consumers durables, furniture, etc. And many Soviet critics have complained also, and with justification.

But there is much less basis for such complaints now. Most necessary commodities can be purchased without delay. Some items cost a lot less than their counterparts in the United States; some a lot more. But lack of money to purchase goods is not a problem: people can afford what they need and want, and sales are brisk. Clothing is expensive, but all observers remark on the improved quality and styling of current fashions.

What about specialty shops? There are many, selling all

possible categories of goods. What there are not are duplicates, triplicates or quadruplicates of the same type of shop in the same area, competing in prices. But in every area there are shops that sell clothing, books, stationery supplies, hardware, jewelry, furniture, shoes, leather goods, household supplies like dishes, pots and pans, utensils, etc.

There are many department stores that sell everything from souvenirs to refrigerators, from handkerchiefs and towels to beds and wedding veils. There are also special department stores for children's clothing and toys and furniture, and women's department stores for all clothing and accessories.

Prices are standard in all stores for the same item.

There are still problems with the assortment, quality and prices of some consumers goods, a situation that is understandable if the background of the development of their production is considered. Early on, with the urgent need to develop basic industry and then, after World War II, to reconstruct huge areas, it was not until the middle of the 1950s that the Soviet Union had the resources to produce any but the most essential consumers goods on a large scale. Even then there was not enough capital to set up huge specialized enterprises. So most consumers durables and household items were produced as by-products of industrial enterprises, especially in the Light and Food Machinery and in the Electrical Engineering Industry ministries, although many other ministries were also involved. Thus there was no central planning of output for consumers durables. They were often produced inefficiently, in small quantities, without specialized machinery or production setups.

During the past decade much has been done to improve this situation. The Light and Food Ministry set up a main administration for electrical appliances, coordinating the work of 33 enterprises, introducing specialization, purchasing modern equipment, etc. In nine years, production increased 173 percent and productivity of labor, 164 percent. (Ya. Golovko and A. Ilyichev, in *Planovoye Khosaistvo*, May 1978.) An outstanding example was the specialized radio manufacturing factory we saw in Riga.

In recent years, also, the Soviet Government has spent large sums to import foreign specialized consumers goods factories.

The most outstanding exception to general availability is still passenger cars. Historically the Soviet Union couldn't

afford a mass automobile industry like that of the United States and, at a later date, Western Europe. The Soviet automobile industry had to compete with tremendous capital investment requirements and defense requirements. In addition the attendant needs in the infrastructure for cars – roads, service stations, garages, etc. – were relatively much more difficult to provide than in most other countries because of the vast distances and severe climate.

Further, Soviet policy saw advantages in an economy where transportation was based primarily on mass transit systems, with private cars a subsidiary luxury. And certainly, the Soviet Union has done an outstanding job in providing urban mass transit, as well as specialized home-to-job systems in smaller industrial towns. The advantages in cleaner air, energy conservation, avoidance of traffic congestion, are obvious.

But there is another side to the picture. An automobile is a real convenience; it makes everyday living more comfortable and opens up a much wider range of recreational activity, greater flexibility for vacations, weekend travel, etc.

Certainly Americans overuse their cars and too many have virtually forgotten how to walk – to the detriment of their health, aside from other values. And the number of suburban teenagers who drive the walking distance to their high schools is certainly excessive. But the saving in time and effort in being able to drive to the supermarket and load up a week's groceries at one go is an undoubted boon, and in a socialist country it is also of real benefit to production. Time freed from tedious shopping permits people to work better, to take less unofficial time off, to have more time for rest and recreation, etc.

After our first trip to the USSR, we concluded – on the basis of people's attitudes – that sooner or later the Soviet Union would have to provide passenger cars because the people would insist on it. Since then, family automobiles have become commonplace in some of the European socialist countries, especially in the German Democratic Republic and Czechoslovakia. Soviet people, understandably, consider it natural that they, also, should be able to have personal cars.

The Soviet Union had developed a sizeable automobile industry, but it had to concentrate on the production of

trucks and buses. By the mid 1960s, however, it was possible to devote substantial resources to the production of passenger cars. The giant Volzhsky Automobile Factory was built at Togliatti to make an adaption of the Fiat. Older passenger car plants were modernized and expanded; output jumped from 344,000 in 1970 to 1,201,000 in 1975.

The number of cars available for sale to the public increased from 64,000 in 1965 and 123,000 in 1970 to 682,000 in 1973 and 1,013,000 in 1976. (*Narodnoye Khozaistvo, 1975*, p. 593; *SSSR v Tsifrakh*, 1976, p. 205.)

There is still a waiting time, but it is shorter and presumably there is still a considerable market in second hand cars.

The 10th Five-Year Plan period provides for only a modest rise in output of passenger cars, but I believe in time to come there will be another big step-up in car production.

Article 15 of the Constitution refers to the satisfaction of the people's *growing* requirements. The perspective during this entire stage of historical development is for dynamic improvement that can never catch up with the continually rising demands of the people.

A crisis of rising expectations occurs in countries where the conditions exist for a better life, but are thwarted by the monopolization of benefits by capitalists and militarists, or by feudal overlords and their compradores; by the evils of unemployment, economic crises, inflation and arms production, which lead to privation. When potential is matched by rising implementation – although with some lag – the majority of the people take a positive overall view of affairs and are motivated to contribute to further progress.

TRADE AND SERVICE FACILITIES

Trade and service facilities in the USSR have lagged behind other economic sectors. In recent years there has been rapid improvement – but there's still a long way to go.

RESTAURANTS

We ate most of our meals in the restaurants of the hotels and guest houses we stayed at in the various cities on our itinerary. We also had some extraordinarily delicious

meals in the executive dining rooms of industrial establishments and academic institutions, as well as some random meals in vacation-area restaurants.

There are a number of high-quality restaurants in Moscow. We took a group of Soviet friends to the Praha, one of the most favored, and they helped with the ordering. It was amazing how little an excellent meal for seven cost. But there's a hitch: you can't just walk in and sit down, nor is it possible to just pick up a phone and call to make a reservation. The publishing house had to make the reservation for us.

Yerevan has many coffee shops and cafeterias, and lots of attractive small restaurants. We lunched at one such cafe, and it was clean and had an appealing ambience, reasonably good food and friendly service.

The dining room of the hotel in Jurmala, near Riga, could vie with any top notch New York nightclub in terms of food, decor, floorshow and orchestra.

The resort restaurant on Lake Sevan – one of many such eateries we passed – served the absolutely most delicious single dish we tasted during our entire trip: freshly caught and appetizingly prepared Lake Sevan *forel* (trout). But that was a specially ordered banquet and it's not fair to compare that meal with ready-to-serve run-of-the-mill dishes.

In the Black Sea resort area, we came across an excellent *shashlichnaya* near the Blue Grotto on the road to Lake Ritsa, and there was an excellent rustic-style garden restaurant in Pitsunda.

From our limited experience, I would say that the quality of restaurant food throughout the Soviet Union compares very favorably with that of better-than-average eating places in the United States – or, in fact, in any other country. The cost is more moderate, even with extras such as hors d'oeuvres, salad and, of course, wine and vodka and/or cognac.

SHOPPING

We've never been able to understand the purpose behind the three-stage rigamarole one has to go through in order to make a purchase in most Soviet stores. For example, let's take a *gastronom* – roughly equivalent in size and content to a U.S. chain grocery store of the pre-supermarket or

modern small self-service type. If you want cheese, or other item that has to be weighed or packaged, you go to the proper counter and locate in the case the cheese you want. You then go to the cashiers booth where you stand in line to pay the amount specified for your purchase and you get a chit which you then take back to the clerk at the cheese counter, whereupon she will cut the amount, exactly, that you paid for and wrap it and give it to you.

The waste of time and labor is shocking and unnecessary, especially during rush hours when stores crowd up. There appears to be no logical reason for this system. If it is designed to minimize pilfering, it seems to me that the possible social loss from petty theft could not approach the real losses resulting from this procedure. I was surprised to find this archaic method in operation even in the modern, block-long, two-storey, super bookstore on fashionable Kalinin Prospekt. The shopping lines are generally shorter and less frequent than a few years ago. And they are due not so much to shortages as to the inefficient saling system.

However, the modern and efficient is already starting to replace this outmoded system, and we saw the new method in operation when our old friend Anatoly Shapiro drove us to visit the UNIVERSAM in the Khimki Khovrino section on the outskirts of Moscow. This is one of the districts in which, together with others like it, the majority of the 8 million Muscovites live – as distinct from the city center. The area has its own schools, nurseries and kindergartens, a music school, shops, restaurants and cafes, a movie theater, and a large hotel.

We reached the UNIVERSAM (SAM means self-service, as distinct from the UNIVER(MAG)s, which are department stores) late in the afternoon when people were getting home from work. The parking lot was filled, but we found a place without difficulty on the street in front of the large store.

We went in and walked around. The shelves and cases were well stocked, clean and, where appropriate, refrigerated. The selection of foodstuffs was ample, although not the assortment found in a U.S., or even in a GDR, supermarket. However, there was considerable choice of brands and varieties.

There were 19 checkout counters, and 18 were working. There were lines of about 10-12 people at each checkout spot. Paper bags were not provided: customers had their own

plastic or string bags or other carriers. The cash registers were not computerized, but they were much faster than the abacuses they replaced.

In general, prices averaged out to be in line with prices in U.S. stores – before inflation set in. Some items were markedly less, like bread, and some substantially more, like meat. As of 1979, however, meat prices in the United States have reached and even passed Soviet levels, and the difference is that in the United States the high prices are a hardship on workers, whereas in the USSR the high cost of meat is offset by very low prices of other foodstuffs and, in general, cause no hardship as most Soviet workers have plenty of money for food. And food costs are constant.

After going through the aisles, we went upstairs to talk to the deputy director, Antonina Kiptenko, and the chief engineer, Anatoly Klimov. They told us that tens of thousands of daily customers spend millions of rubles a month in the store, so it is a sizeable operation.

The UNIVERSAM is part of a three-unit combine, with an affiliate store elsewhere in the district and a fruitstand outdoors in the same plot.

Ms. Kiptenko told me, "We have a very good collective of 600 workers. There is an atmosphere of study and friendship and mutual help. We have cultural activities and excursions; workers get *putyovkas* to a special sanitarium at Adler" (a resort on the Black Sea, near Sochi). Average wages were 125 rubles a month, about 45 ruhles below the average industrial wage. That's a somewhat narrower differential than in the United States.

The second floor corridor walls were decorated with the usual symbols of a Soviet labor collective – photographs of outstanding workers, charts showing the plan goals for the year, socialist competition entries, graphic appeals to observe safety regulations, etc.

And if you think a staff of 600 excessive, that is partly accounted for by the fact that there was also, on the second floor, a retail trade school – a special secondary school to train retail trade personnel. Students study there in the morning and work in the UNIVERSAM or in one of its satellite units during the afternoon and evening. Courses include the economics of merchandising, the culture of trade service, inventory control, packaging – 30-40 percent of the

foods on sale are packaged in the store–and gastronomy. Also taught are courses on how to operate a cash register, as well as other technical data, and even horticulture.

The idea is to develop personnel with all-around knowledge of retailing, not only from a narrow business viewpoint but also in terms of how it fits into the broader social objectives of improving living standards. That's what is meant by the culture of trade service.

The entire course takes two years.

Mr. Klimov told us how they are trying to improve and modernize the operations. A planning institute is engaged in broader research into retail trade problems, and a scientific institute is working on improved cash registers and is otherwise trying to automate operations. In fact there was a retail trade and service research institute near our hotel, and we're sorry we didn't discover it in time to arrange a visit.

The talk with the deputy director and engineer was not arranged in advance. We just walked in and were welcomed when Anatoly explained why we were interested in the enterprise. This was not a "showcase"; stores like it are being built all around Moscow and in other large cities.

There is also a spreading network of advance-order stores. You can phone in, or stop in on the way to work, order your evening meal, and pick it up on the way home, precooked and packaged. The principle is somewhat like our takeout Chinese restaurants or pizzerias, but with a more varied assortment of standard dishes.

In the older, downtown sections of cities there are still mainly specialized food stores–bakeries, dairies, fresh fruit and vegetable markets, shops featuring canned and bottled fruits and vegetables. There are also kiosks selling one product–usually an in-season item of which a large shipment has been received.

What about the long lines? We didn't see many on this trip. There were groups of people waiting in front of stores closed for the lunch hour–which is still the custom–and this probably is a nuisance for out-of-town visitors and tourists who do not know the lunch hours, which vary from store to store. That is something that could be standardized with positive results.

We came across three really long lines–two in Moscow and one in Leningrad. In Moscow, the three abreast line

at the large jewelry store on Kalinin Prospekt started outside and wound through the store, up the stairs to the second floor. No one special item was in demand, there was just this crowd of people waiting their turn to buy rings and watches and pendants and pins.

Also on Kalinin Prospekt in Moscow, there was a long line inside the fashionable women's department store where, upstairs, a shipment of modern dresses had just been received.

The third line was outside the biggest bookstore in Leningrad. A new edition was being sold from tables on the side street around the corner from the entrance, and a line half a block long and several abreast were waiting to buy it. It was an inexpensive volume, one of a series of reminiscences from the period of the civil war just after the October Revolution. Considering its role in the Revolution and in the terrible long nazi siege in World War II, the designation "Hero City" was well earned by Leningraders, and their interest in books about their fathers' and grandfathers' military exploits was quite understandable. Although, after reading the capitalist press about the fast sale of "hard-to-come-by" books, we were "curious" to see just what *was* so popular. Hardly a "dissident" item!

Among the modern innovations being introduced to expedite shopping and service facilities for Soviet citizens is the deposit charge account system. With such an account, one can be on the list for prompt appliance repairs (such as TV), analogous to a service contract arrangement in the United States. Similarly, at a Moscow automobile factory, workers may charge their meals, and the bookkeepers take the amount out of their paychecks, eliminating lines to pay cashiers and giving the workers more time at lunch hours.

CREDIT AND SAVINGS

In general, there's very little use of consumer credit in the Soviet Union, except for homebuilding loans. The credit concept doesn't fit in with the country's determination to maintain a steady relationship between purchasing power and supply, with its essentially successful attempt to prevent inflation.

However, Soviet citizens do have savings accounts. This is sometimes referred to in the West as a sign of hidden inflation, or of increasing shortages. But an alternative explana-

tion is just as reasonable: with the increased availability of consumers durables, automobiles, cooperative apartments and other expensive items, there is more motive for people to acquire substantial savings accounts in the absence of a consumer credit system.

The number of savings accounts in the USSR increased from 17.3 million in 1940 to 57.4 million in 1965 and to 113.3 million in 1976. (*Narodnoye Khozaistvo SSSR, 1977*, p. 597; *SSSR v Tsifrakh*, 1977, p. 207.) That suggests that a great majority of the families have savings accounts.

The average amount saved has increased, now approaching 1,000 rubles per account. The annual increase in savings amounts to 6.8 percent of their income for workers and 10.1 percent for collective farmers' families in 1975. (*Narodnoye Khozaistvo SSSR, 1976*, pp. 596-97.)

These percentages tally with individual families' savings in the United States (usually from 6 to 8 percent), but the net saving in the United States is concentrated among a small proportion of the population in the upper income, generally property-owning groups. A large proportion of U.S. workers have no net savings but, in fact, tend to accumulate more and more debt.

It is an interesting and significant difference between the two social systems that in the USSR workers save in order to buy items that will improve their living standards while, in the United States, workers go into debt for the same reason. Thus, although the Soviet way is slower, it is surer and strengthens the pattern of security from debt and financial disaster.

SERVICES

The supply of personal services – repair, laundry and dry cleaning, barber and beauty shops, etc. – has increased especially rapidly. Between 1965 and 1977 the volume of such services increased four times – almost sevenfold in rural areas.

The increase was concentrated in the most acutely needed types of services. For example, apartment repairs increased 17 times and repair of consumers durable goods – appliances, automobiles, furniture, etc. – 7 times between 1965 and 1976. (*SSSR v Tsifrakh*, 1976, pp. 215, 217; *Pravda*, January 28, 1978.)

In 1977 the per capita supply of personal services in the

cities was still double that in rural locations. However, the effective difference is probably less. Many country people have access to nearby city shops, and also, families are larger and more often have do-it-yourself capabilities than city dwellers. But efforts are being made to reduce the gap between city and country in this as well as in other respects.

On the whole, material goods and services available to the Soviet people are still less in quantity and quality than those available to the average U.S. person. But in the increasingly important areas of health, education, culture and recreation, the Soviet people have it much better than most working people in the United States and other capitalist countries.

It may be possible to put a dollar or ruble sign on the cost of education and health care, on ballets and children's camps, on music lessons and on training to be an airline pilot, but it makes even less sense than "adding apples and oranges". Given the basic necessities – shelter, clothing and food – who is better off: one with fancier necessities and lots of gadgets or one with only serviceable necessities and markedly better, free health services, access to free education through university level, free or greatly subsidized vacations and free or inexpensive cultural facilities?

Just a few facts: during 1977 the number of doctors in the USSR increased by 29,000, reaching 893,000 or one doctor for every 291 persons. In 1974 there were 350,600 active doctors in the United States, or one for every 603 persons. (*Pravda*, January 28, 1978; *Statistical Abstract of the U.S.*, 1976, pp. 78, 11.) That is, the Soviet people were twice as well supplied with doctors. And to that it is necessary to add that the distribution of doctors in the USSR is much better, geographically, among different races and nationalities, and in places of work. And of course, it is necessary to contrast the free medical services to all people in the Soviet Union with the $106 billion that Americans spent for medical care in 1976, an amount inflating at close to 20 percent a year. Not to mention the innumerable ailments and dental problems that go untreated because of the exorbitant hospitals and doctors' fees. (*Survey of Current Business*, June 1977.)

By now there must be thousands of American tourists who have fallen ill in the Soviet Union and who have returned home with wonderment at the treatment they were

given and at the refusal of Soviet hospitals and doctors to take payment.

The advantages of the Soviet medical system provide a particularly sharp expose of the unreliability and lack of principle in CIA comparisons of U.S. and USSR living standards (or other economic indicators). In testimony before a Congressional committee in 1975, then CIA chief William E. Colby claimed that Soviet living standards were only one-third the U.S. level. Part of that conclusion was reached by calculating that health services available to the Soviet people, on a per capita basis, were only 32 per cent of those available to Americans.

The absurdity of this statistic was so blatant that Senator William Proxmire, chairing the subcommittee handling the hearing, wrote Colby "...there are more doctors per capita in the USSR, more hospital beds, and a system of comprehensive free medical care.... How are your figures derived?"

Colby's answer included a chauvinistic claim that Soviet doctors are 20 percent less competent than American. He also, apparently, then "corrected" by using the ratio of the wages of Soviet doctors to the incomes of U.S. doctors! But the often outrageously high medical fees in the United States are hardly a measure of better service – quite the contrary. (U.S. Congress, Joint Economic Committee, *Allocation of Resources in the Soviet Union and China*, 1975, pp. 79, 86.)

Free higher education with student stipends is another very positive feature of Soviet society. In fact, it was awareness of the tremendous educational progress of the Soviet Union after the first Sputnik was launched in the late 1950s that led the U.S. Government, from competitive considerations, to multiply the funds advanced in support of higher education, including programs of student loans, and, on a small scale, scholarships. In recent years, however, educational funds in the United States have again been sharply cut, one of the first services to suffer from the financial crisis hitting the major cities.

Soviet students in universities receive stipends as a matter of right, dependent only on their keeping up with their studies. U.S. students who receive loans must pay them back out of their earnings, with interest, after graduation. Many who cannot get professional jobs, or any jobs, are forced into bankruptcy on account of these loans.

In the Soviet Union in 1977 there were 5 million students

in institutions of higher education and 4.7 million in specialized middle technical schools. In addition, 2.4 million young workers attended vocational schools where 2.1 million acquired skilled qualifications. (*Pravda*, January 28, 1979.)

In the United States in 1974, there were 6.8 million students in four-year colleges; 2.2. million in two-year colleges. In 1977, 930,000 received bachelor's degrees in the United States, as compared with 752,000 graduates from higher educational institutions in the USSR. (*Statistical Abstract of the United States*, 1976, pp. 141, 147; *Pravda*, January 28, 1978.)

Enrollment in U.S. colleges has multiplied nearly three times since 1960 and now exceeds that in the Soviet Union. However, Soviet students, almost invariably, are trained as specialists in occupations required by industry, in scientific disciplines, or as educators. They are all guaranteed a job in their specialty: the numbers admitted to college in each curriculum are determined by the requirements of the economy for experts in that field.

In the United States, a minority of college students graduate in the science and engineering fields. The most popular major is now Business Administration, taken by millions of young hopefuls desirous of learning the secrets of getting rich. And regardless of their major, jobs are not guaranteed to university graduates in their area of specialization – or in any other area. for that matter. As witness the number of young people with degrees who are unemployed or working in service jobs in order to support themselves.

Nor does education stop with full time schooling in the USSR. In 1977, 34 million workers were studying in after-work courses connected with their establishments to learn new skills or to get engineering or professional degrees.

In the United States in 1974, 14 million people were engaged in vocational programs, but many of these programs were without potential productive significance – such as the 3.7 million students in consumer and home economics courses. (*Statistical Abstract*, p. 149.)

Here is probably the most impressive figure indicating the extent to which young Soviets are being educated: more than 96 percent of 8th grade graduates in 1976 entered some kind of middle educational institution. (Maier and Rutgaiser. *In the Name of the Peoples Welfare*, Politizdat Publishing House, Moscow, 1976, p. 38.)

The rapidly expanding network of preschool establishments

in the USSR takes care of the majority of all tots whose parents are working. The number of preschoolers in nurseries and kindergartens has reached 13 million, whereas only a few hundred thousand of U.S. children of working parents are cared for in day-care centers. There is an urgent need in the United States for child care facilities, especially for the urban poor and for minority people.

About 22 million children and teenagers went to Young Pioneer camps and similar vacation centers in the Soviet Union, and 49 million workers and their families vacationed at resorts. Children's camps cost very little – the charge is based on the parents' income – and vacation costs are also minimum, especially for those with *putyovkas* from their trade unions, which entitle them to big discounts on fares and resort charges.

We were told that workers with lower incomes are favored in the granting of these precious subsidized reservations.

Never in any non-socialist country have summer camps been available to the masses of children. Never have the industrial and service workers, nor white collar and professional workers, of a non-socialist country been able to enjoy vacations on a comparable scale. Certainly not in the United States, where travel and resort charges prevent millions from getting away and where those who do spend their vacations at a resort, or in travel, have had to save diligently for a long time to meet the cost. Although in recent years, in the United States, millions have participated in outdoor sports, camping and hiking – despite the high cost of fees and equipment. These activities, however, are not socially organized, for the most part, and are engaged in on an individual basis.

Chapter VII

INCOME DIFFERENTIALS IN THE LIVING STANDARDS IN THE SOVIET UNION

Contrary to the impression anti-Sovieteers want to foster, the Soviet Union is not an egalitarian society. As previously explained in the introduction to this book, Marx' concept of a socialist society is "from each according to his ability; to each according to his work". And the Soviet Union is a socialist country.

Although, while payment according to work remains the principle, an increasing proportion of goods and services in the USSR is distributed according to need – a criterion of communism. Thus the transition from the lower stage (socialism) to the higher stage (communism) is a gradual process.

In 1940, an equivalent of 23 percent was added to the average Soviet worker's wage through social consumption, distributed according to need. By 1955, this addition was 28 percent; by 1965, 33 percent; and by 1977, 37 percent. (*Narodnoye Khozaistvo SSSR, 1975,* p. 546; *Pravda*, January 28, 1978.) And it continued to rise.

A substantial and increasing share of consumption is thus already according to need. But the predominant form of distribution is according to work, and the expectation is that this will continue to be the case for quite a while to come. And as long as this is so, there will be differences in income.

But considering the extent to which social needs are provided, the effect of money income differentials is softened. And, as the above statistics show, this moderating factor is increasing in importance and in amount, reducing the disadvantages of those at the lower end of the income scale.

LOW INCOMES

In capitalist countries, income differentials are sharp and are accompanied by marked class differences in ways of life between the rich and the poor.

Poverty is a visible condition. It isn't only associated with a specific level of universally applicable income. You can see it in the buildings and streets in slum sections, in the swollen bellies of undernourished children, in the faces of men and women without jobs and without hope.

Poverty is relative. It signifies a degree of deprivation decisively below the standard of living regarded as reasonable at a given time of history, in a given area of the world.

The United States is one of the world's richest nations. But poverty there is visible and widespread. The current President of the United States, Jimmy Carter, was shocked when he toured the South Bronx, a "poverty area" of the country's richest city, New York. And official figures recognize some 25 million U.S. people as living below the poverty level.

A *New York Times* reporter, in discussing USSR living standards, speculates that there may be poverty in some rural areas, but he doesn's claim to have seen any himself.

We have seen old-fashioned wooden houses in rural areas, and many still may not have all modern plumbing and mechanical facilities; but all have electricity and heating, and householders realize that it is only a matter of time before they will be able to move into up-to-date homes or apartments. Their continued residence in old houses is not a matter of poverty but of the housing shortage, which is yearly being lessened. Many such rural homes have TV sets and very handsome furnishings; and some people continue to live in the traditional style houses through choice, preferring them – modernized – to apartments in multifamily buildings.

There are features of Soviet life which have brought about the essential elimination of poverty: full employment means that all able-bodied people can have a living wage; housing is not only virtually free, but distributed in large part according to need, so that a family with a relatively low income may have housing as good or better than a family with higher income; free medical care and education without discrimination against people with low incomes

also prevent the appearance of poverty.

In capitalist countries, poverty is often associated with racial discrimination. The equality of different races and nationalities in socialist countries, in economic as well as political and social terms, prevents this. The general scale of wages has been increased to the point where even those at the low end have enough to ensure shelter, an adequate dict and clothing. But perhaps most important, people with low and high incomes bave the same human and social and cultural rights; they have the same social status, participate in the same activities, and are not segregated in "poverty areas".

So there isn't a "poverty line" below which people are regarded as poor, but there is a definition of "low income" in the USSR. It's a per capita income of less than 50 rubles per month.

I learned about this from Valery Maier, an economist of the Gosplan Research Institute. Fifteen years ago, be said, the average per capita cash income of Soviet people was 50 rubles a month. In 1977 it was 100 rubles a month, and, be said, anybody having an income below 50 rubles – and that figure includes children and even new-born infants – is regarded as being in the low-income category. The aim is to raise everyone's income up to at least that level. Of course, he explained, that is a moving target: once it is achieved, it will be raised.

Because minimum wages are now universally at least 70 rubles a month, and because collective farmers' incomes are approaching the level of workers', low income families are mainly those with many children, especially among rural families, where real living standards are not fully reflected in income statistics. Soviet policy, unlike that of many capitalist governments, including the United States, is to encourage population growth. Small subsidies are given to mothers of three or more children, in addition to the provision of very liberal arrangements for all working mothers.

In 1974 a measure was enacted directly focused on raising the incomes of low income families. For all families with incomes of under 50 rubles per capita, grants of 12 rubles per month are paid for each child aged 8 years or less. Thus, in a family of five (parents and three children, aged 2, 4, and 8) with an income of 200 rubles a month, the per capita income is 40 rubles. This family

receives a subsidy of 36 rubles per month, raising the total to 236 rubles, or 47.2 rubles per capita.

Originally it was proposed to cover all children up to and including 17 years; but it was estimated that this would require an appropriation of 3.5 billion rubles yearly, and only 1.8 billion could be appropriated. Thus the benefit is limited, initially, to children 8 years of age or younger. However, it turned out that there were fewer children than economists had estimated in low income families, so only 1.4 or 1.5 billion rubles are spent yearly. This amount provides subsidies for about 10 million children, at least half of them living on farms.

Maier pointed out to me that the needs of the older children, especially teenagers, are greater—they eat more, need more clothing, have more school-related expenses, etc. He advocates extending coverage to all children up to working age, and he is confident that that will be done.

Actually, the age range of coverage is gradually rising: once a subsidy is granted, it is in effect until the child reaches 12 years unless the family income rises above 50 rubles per capita before then.

We were, of course, determined to meet a low income family receiving a subsidy for the children. At our first stop, in the West Siberian oil country, the local officials told us there were no low income families—and this could readily be believed in view of the wage scale more than double the national average. At Novosibirsk, also, wages are higher than in European Russia, and we were told that very few families receive such subsidies.

However, in Yerevan we spent a very interesting morning with a subsidized family. One of our hosts in Armenia, a director of the publishing house, took us to the home of a printing plant worker, a mother of four. She was receiving 4 rubles a month on account of being the mother of four children, plus 12 rubles a month for her 10-month old baby, Mariana. Her other children ranged in age from 10 to 16 and thus did not qualify.

Asya Bogusyan, the mother, was on leave from her job as inspector of books coming off the assembly line at the printing plant. The baby was born in July 1976. She planned to go back to work as soon as her year was up.

I did not meet Mrs. Bogusyan's husband, who was at work. He drives a truck for a dairy factory and gets not

much more than the minimum wage, with occasional small bonuses. But in addition to chubby, smiling Mariana, the 10-year old boy and the eldest girl were at home. The girl, Egush, was in the 10th grade, and upon graduation wanted to enter the geographical department of the Pedagogical Institute in Yerevan. The other child was at a Young Pioneer camp.

Also present was Mrs. Bogusyan's father, Aram Mashigyan. He was 76 years old, a prominent member of the Communist Party who held a number of key jobs before going on pension, at 120 rubles a month. But, not wanting to be idle, he works as a dispatcher at 80 rubles a month—while drawing his full pension.

The family lives on the first floor of an old house owned by Mashigyan, whose other daughter lives upstairs. There is a small backyard plot which the families cultivate. The Bogusyans have a large refrigerator, a washing machine and a TV set. Their housing space and facilities are about the same as those of the average Soviet worker. But the house is on an unpaved road, scarcely more than an alley, which would be inconvenient for a family with a car.

Because of the large family and the lower-than-average income, the Bogusyans spend about 70 percent of their income for food, with relatively less left over for clothing and other consumers goods than most families have. But Mashigyan's income was not included in the calculations for the purpose of applying for the subsidy, since he is considered a separate family. However this was not decisive because the law states that pensions cannot be included in determining per capita family income. So even if he were considered a member of the family, his additional 80 rubles a month of wages would not be enough to raise the per capita to more than 50 rubles a month. I think it likely that a good part of his income is, in practice, used for the large family's needs.

We asked Mrs. Bogusyan what she does for vacation, and about the children's holidays. She said: "Sometimes I go to the Lake Sevan rest home of my trade union; sometimes to Sochi; and sometimes I visit my mother in her village. The children go to a Young Pioneer camp for a month, at 14 rubles 80 kopecks each."

I think it fair to conclude that this family did not suffer material deprivation.

The mechanics of getting the subsidy were explained to us: As soon as Mariana was born, Mrs. Bogusyan made the application to the commission at the printing plant which had the authority to grant the 12 rubles per month. The application contained the statement of the family's income for the previous 12 months, as follows:

	Rubles
Husband's wage	844
Wife's wage	1,298
Value of produce from backyard plot	90
TOTAL	2,232
Monthly average	186
Number in family	6
Per capita monthly income	31

Since the per capita monthly income was well under 50 rubles, the family was granted the additional 12 rubles per month. Note that neither this 12 rubles, nor the 4 rubles per month received by the mother for having had four children, are included in income.

No welfare investigator will check up on the family: the 12 rubles are received automatically each month. All that has to be done is to submit an annual income statement. Whenever the income exceeds 50 rubles per month *over a full calendar year*, the 12 ruble subsidy will stop the *following* year. And this may well happen: both husband and wife have gotten raises since the period covered by their application, although they still have quite a way to go before they achieve the 300 rubles a month, equivalent to 50 rubles per capita for the six member of the family.

Obviously, for this family, the 12 rubles was not a life and death matter. But it made things a little easier. Presumably, not all of the 24 of the 600 workers at the printing plant who are receiving such subsidies have the advantages of the Bogusyan family—i.e., the rather well-off grandfather whose wages and pension didn't count.

Of course the situation of low-income families isn't satisfactory, but it is decidedly better than the grinding misery afflicting most poverty-level families in the United States. Where are the U.S. "welfare mothers" who get a complete care in child care centers—often at the factory or other place of work—while they are on the job? Where are the U.S. "welfare mothers" who are supplied by their trade unions with first rate accommodations at the best

vacation resorts and whose children are sent to summer camps? And whose children have no financial barriers to admission to the college of their choice?

And where in the United States are welfare agencies that do not require applicants to go through endless, time-consuming red tape, humiliating prying into irrelevant personal affairs, and constant check-up visits by snooping investigators?

Under capitalism, poverty is a permanent feature. Under socialism, low income represents a much higher living standard than most of the population had 15-20 years ago and is a way station toward high living standards for all. It is a way station made as comfortable as possible, with no affront to dignity, and one that will be passed through as rapidly as increasing productive efficiency of workers and farmers permits.

WAGE DIFFERENTIALS

Yes. there are wage differentials in the Soviet Union, and there are many reasons for the differentiation in a socialist-not-yet-communist society. But the range of wages and salaries from the minimum to the maximum is only about 10 to 1—from 70 rubles to 700 rubles a month.

I think this range is valid for 99 percent of the Soviet population, excepting a certain number of collective farmers who may still receive less than the minimum, and leaving aside regional differentials and certain forms of non-wage income, such as book royalties, fees for works of art and special performances, etc.

In the United States, the comparable range is about 250 to 1, from the million dollar salary of the chairman of General Motors Corporation to the $4,000 or less annual wages of farm workers, household workers, etc., and not even taking into consideration the non-income of the unemployed.

In the USSR, differentials are necessary as an incentive to workers to do their best and to improve. There is the inducement that a university training will ensure a better job, enticing young people to take on the hard work and additional years that advanced education requires, although many students, of course, want to go on to institutions of higher learning regardless of the material incentive.

It is necessary to remember that the Soviet society had to train literally tens of millions of engineers, technicians and scientists in a short time, while the majority of these millions could not be spared from the immediate construction and production process. That meant night courses and learning on the job. So today we find that a large proportion of factory managers started as workers, acquiring knowledge and developing skills as they advanced.

It's comparatively easy to determine earnings of people engaged in the same or similar lines of production, with identical equipment. But it is more complex to determine the proper differential between skilled and unskilled labor, heavy and light labor, mental and manual labor. How much of a premium should be set for a college education, for working in dangerous conditions, or in harsh climates?

These differentials, in fact, necessarily evolved to some extent extemporaneously, as situations arose, and have been modified by changes in the supply of and demand for different kinds of labor.

And within the general sphere of non-supervisory labor, socialism may present a wider range of wages and salaries than capitalism, as there is a conscious attempt to use differentials as a stimulus while the capitalist employer tries to keep the wages of all workers as low as possible. But overall, other factors result in a much wider range of personal incomes under capitalism than under socialism. The entire capitalist class, receiving incomes from the labor of others as well as for what work they may do themselves, is at one end of the scale. At the other end are those workers, victims of discrimination because of race, nationality, age or sex–or all of these–whose wages are depressed below the norm.

The million dollar incomes of corporation heads include a major portion of overt and covert sharing of profits out of the labor of a company's workers, and we have not even taken into aceount the incomes of the main capitalist families, each receiving hundreds of thousands or millions of dollars of income from investments, without their having necessarily done any work whatsoever.

The effort to improve the wage system in the Soviet Union has two objectives: to reduce or eliminate injustices and excessive differentials and to make the differentials more operative as stimulating factors.

EXCESSIVE DIFFERENCES

On our first visit to the Soviet Union in 1960, I gave a series of lectures at the economics department of Moscow State University. After the last lecture, a group of students approached me and asked whether I would meet informally with them and some of their friends, in their domitory. I would not need an interpreter, they told me, because several of them knew English. So I did, and a very interesting evening it was.

Wage differentials was one of the topics that came up, and I was surprised that these students, who were destined to receive well above the average salary, complained that inequality in incomes was excessive–in particular, between white and blue collar workers. At a later date, when I met with workers at the Likhachov automobile factory, I repeated what the students had said and the workers disagreed: they felt, in fact, that they were just as well off as the white collar workers.

Before I left the country, I tried to sort this ›ut in the course of a prolonged interview I was granted by Anastas Mikoyan*, a veteran revolutionary leader who was then a member of the CPSU Politburo and First Deputy Prime Minister of the USSR.

Mikoyan said, and remember this was in 1960:

"The gap (i.e., the wide differential range in wages–*V. P.*) was natural when a peasant country had to create qualified technical help and intelligentsia. One had to have a big gap to spur all capable men to struggle to rise and learn. It was quite justified and necessary.

"This was not so great as the gap which arose after World War II. During the war and immediate postwar years enterprises tried to establish very high pay for jobs for which they could not get people. In heavy industry they raised the pay of directors, qualified workers, and engineers very much. At that time people had ration cards for the food supply, so the gap in money wages didn't make so much difference in eating. Those with extra money bought in commercial stores at four to five times the regular prices.

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* Mikoyan, A. I. (1895-1978), prominent Soviet statesman. At that time a first deputy premier of the Soviet Union, a member of the CPSU Presidium.

"When there was a currency reform in 1947 and the rationing system was abolished, the problem really arose, even though low wages were raised somewhat. Because now the earlier excessive rise in the wages of leading personnel was fully reflected in purchasing power.

"In the last few years, with the growth in the number of qualified workers and intellectuals, the large gap can no longer be justified economically, and begins to play a negative role. Now for the jobs with little pay it is difficult to get people. Now in Moscow there is a shortage of 10,000 sales clerks. Young people who finished secondary school do not want to take such jobs because the pay is too low.

"Top salaries have not been cut much because it is easy to raise, tough to cut. Excesses have been cut, real excesses, but that affects only 100,000 individuals. But you cannot cut the pay of millions.

"The main procedure is this: those paid well get no increases. Those in the middle get slow raises. Those on the bottom get big raises."

Mikoyan didn't agree with the students who thought that this process of reducing inequality was going too slowly, and he told me why he thought the workers I had talked with had the right approach.

"Part of our great strength is not to get into a demagogic situation. We could easily promise very much and deliver for one year, but then the policy would kick back at us. One must always promise somewhat less than one can give. That is one of the main reasons we have no strikes, no conflicts. People believe that essentially the government and the Party will be doing the reasonable thing."

And as for the students, he said:

"I am against equalization. The students probably have equalitarian tendencies. The vast majority of the population think there should be wage differentials.

"The special feature of our wage scale is that we have a self-corrective in medical services, education and other items provided without cost and in equal amounts to all categories of working people.... We will continue to extend the free benefits....

"This is a very complicated question, but we are aware of it, we are studying it, and we believe we are coping with it. Equalitarianism is not our ideal. (Maybe when we have complete communism–for example, if we had the productive capacity of America! Take American industry and the Soviet system and combine those two!" (From Victor Perlo, *How the Soviet Economy Works*, International Publishers, New York, 1961, pp. 48-50.)

The record shows that during the late 1950s and the early 1960s the trend toward reducing inequalities proceeded rather rapidly. Between 1957 and 1968 the minimum wage increased from 22 rubles to 60, or 2.7 times, while the average wage increased only 1.5 times. (V. Maier and V. Rutgaiser, *op. cit.*, p. 17.)

According to Maier, since 1968 this trend has stopped. With the aim of increasing material incentives for better work, existing wage differentials have been maintained and in some respects, through more liberal performance-related bonuses, widened. But the broadening of non-cash benefits to the population probably has been sufficient to ensure a continued overall narrowing of real income differentials.

During the 1950s and 1960s privileges were also reduced. While in Moscow in 1960, restrictions were imposed to limit the use of official cars for personal reasons, and a ban was imposed on owning second homes (as distinct from unheated summer dachas). Western journalists make much of special stores where high officials, allegedly, are able to buy top quality imported goods at bargain prices. Soviet diplomats with whom I discussed this heatedly denied the essence of the charge. They said they knew of only two such stores, that they were for the use of extremely busy leading people, who did not have time to shop, and that the stores did not provide them with special goods or at special prices.

It's difficult to distinguish between a simple difference in real income and the receipt of special privileges beyond "reasonable" bounds of income in kind. From my observations, I believe there are privileges, but that they are small when compared with the privileges of the high and mighty in capitalist society; and that the Soviet Union suffers little from the bribery and corruption which are so much a part of the system of class privileges in capitalist countries.

And I do know that, in the Soviet Union, no one is unclothed, unhoused, or unfed; and if some have more than others, everyone KNOWS that there will always be provision for the basic needs of all.

Chapter VIII

DEMOCRACY AND CULTURAL FREEDOM

As we walked through the heavy electrical machinery plant in Novosihirsk, director Albert Bandyshev invited me to speak to workers–to anyone I chose. He gestured toward a man tending a machine; but, alert to the possibility that this worker might have been a "reliahle", oft chosen interviewee, and wanting to choose for myself, I said I would like to talk to the attractive young woman operating a giant crane from the overhead moving cab. Quite reasonahly, Bandyshev said she could not be interrupted in her work; and just then two hlue-smocked women, no longer young, walked toward us along the corridor between the machine tools.

Perhaps they are service workers, or cleaning women, I said to myself. It would be interesting to talk to a worker making less than the factory average of 190 rubles a month. So I selected one of these women. She had a pleasant, open Slavic face, and she might well have portrayed a peasant woman in a film of the Revolution or the collectivization campaign.

Explaining, through Elena, who I was and what I was doing, and apologizing for asking personal questions, I proceeded:

"What is your name?"

"Galina Ruzankina."

"Your occupation?"

"Punching machine operator."

"How long have you worked here?"

"Nineteen years."

"Your wages, please?"

"Average, including bonus, 280 ruhles per month." (That was my first surprise, but not my last. It was 80 ruhles ahove the plant average.)

"Do you have a family? What is your hushand's joh?"

"My hushand is on pension because of a serious heart operation–a pension of 120 rubles per month. We have two daughters, aged 17 and 15. The oldest is in the 10th grade" (equivalent to senior grade in a U.S. high school). "She wants to go to air personnel school to become a stewardess."

"Are you a Party member?"

In Surgut and Nizhnevartovsk, when I asked workers this question, I found the answers roughly in line with the national average–about one of every seven or eight factory workers is a Party member–so I didn't particularly expect a positive answer.

However, Ruzankina answered with a slight smile: "Yes, I have heen a memher for 10 years."

That answer prompted my next question: "Are you active in trade union work or other social activity?"

"I'm a member of the oblast trade union committee and deputy of the Novosibirsk City Soviet. I'm engaged in preparing a series of regulations for the trade union committee on the special prohlems of women workers. In our plant, we devote much attention to making women's work lighter, to arranging child care, getting *putyovkas* for vacations, and obtaining adequate housing for women workers."

Here we can begin to see an aspect of Soviet democracy that has no real counterpart in American life. You will not find a rank and file shop worker (especially a woman machine operator) on the AFL-CIO Central Trades and Labor Council of most U.S. cities. And certainly you won't find one on the New York City Council or similar hodies in other large U.S. cities. Novosihirsk is sometimes referred to as the Chicago of Siberia. Well you won't find a worker from U.S. Steel's South Works in the upper echelons of Chicago's hoss-ruled city government.

Then Mrs. Ruzankina volunteered an additional piece of information: "I was a delegate to the 25th Party Congress." That was a surprise, indeed! It meant that I was speaking to one of the 5,000 most important political people in the Soviet Union.

That's the approximate number of delegates elected to attend the most significant meeting in recent Soviet history, in 1976. The periodic Party congresses, convened often at the start of a five-year plan period, are officially the

highest policy-making body in the Soviet Union. Of course, there cannot be any detailed working out of policy in a 10-day meeting of 5,000 people. The top leaders, members of the Central Committee of the CPSU, are more actively and consistently involved, and the small Political Bureau makes the day to day decisions. But the Party congresses select these top leaders; and it is the congress delegates who, through their regular work and reports, bring to Moscow the results and the information which have to be collated for the formulation of policy. They are the ones who are the most active innovators of local policy and in advancing proposals of national significance. And they bear the primary responsibility for organizing the carrying out of congress decisions.

We have nothing like it in the United States. Certainly not the quadrennial conventions of the Democratic and Republican Parties, which are attented mainly by people selected in primary campaigns as personal supporters of would-be presidential candidates—with a close correlation between the amount spent for campaigning and the winning delegates. And whose main function is to select one man—a presidential candidate, whose policies generally do not differ in most essentials from those of his rivals. And you are not likely to find any General Electric or Westinghouse shop workers at these conventions.

After our conversation, while we were posing for a photograph, Galina said, "I have to leave now; I am temporarily acting as forewoman and have to go back to my job, but I would be very happy if you and your wife could find the time to visit with my family at our home."

We accepted the invitation and we had a delightful midday meal with the four members of the Ruzankina family—Galina and her husband Vasily, and daughters Tanya and Svetlana.

Their apartment, in one of the many new blocks of housing in Novosibirsk, had two bedrooms, a living-dining room, kitchen, bathroom and balcony. They pay 15 rubles a montb, including facilities—electricity and heat—and there was full standard equipment: refrigerator, stove, TV, radio and record player, as well as an upright piano manufactured in Novosibirsk.

Vasily was impatient with his enforced idleness and

was waiting for thc doctor's permission to return to work. But, as I recall, thc new apartment had bcen allocated to the family because of his illness. And although it was very comfortable, it was no different in quality or size from that of other four-person families. It was obvious that the high posts Mrs. Ruzankina held had not made her part of some materially privileged elite, which supposedly rules the USSR according to hostile Western journalists.

However, let mc admit that the festive rcpast was far from ordinary: a dazzling array of *zakuski*, including cod liver (which we'd never had in solid state before) and sturgeon, in addition to a variety of other fish, salad, egg and meat teascrs; followed by *pilmeni*, the Siberian won-ton/kreplach served with vinegar or sour cream—all of course accompanied by quantities of potables, including tea.

It was a memorable visit; and aftcr digesting, with lots of getting-to-know-cach-other conversation, we went to bathc in the still frigid Ob, taking Tanya and Svetlana with us.

THE USSR SUPREME SOVIET

We had lunch with Evgeny Fedorov and his daughter in a traditional old Russian restaurant in Moscow.

My friendship with Fedorov, a most unusual and honored dignitary, goes back only a few years, when I met him at a peace conference in Paris. I interviewed him then about Soviet views on the cnvironmental and safety aspects of nuclear energy—problems on which he is considered an expert—and since then I have spent time with him on his visits to the United States. We were fortunate to find him in Moscow during our rather bricf stay there.

Fedorov was one of the four men on the Papanin expedition to the North Pole in 1937. Landing by plane near the pole, they became the first Soviet inhabitants on an ice floe, conducting scientific observations in the Arctic. I think they wcrc thc first men, after Peary and Henson, who actually reached thc pole. At the time, thcir photos were on the front pages of the world press.

Subsequently Fedorov became an important executive in ecology-related scientific arcas. His last job in this field

was as director of the Hydrometeorological Administration*, which combines the functions of the U.S. National Weather Service with major responsibilities in environmental control. And at the same time, he became an important peace activist, a member of the Presidential Committee of the World Peace Council and a frequent participant in conferences and other dialogues between leading U.S. and Soviet personalities. Now, although retired as director of the Hydrometeorological Administration, he still does ecological-scientific work, and, in addition, devotes much of his time to public activities and writing. He is the Soviet delegate to the United Nations Environment Program, and his writings include an important volume on the interaction of man and nature.

Fedorov retains his great interest in Arctic research. When we met in Moscow, he had recently returned from a flight to the Pole, having gone in with the resupply plane that took a fresh crew to the permanent Soviet polar station.

At lunch I noticed that Fedorov was wearing the modest lapel pin of a deputy to the USSR Supreme Soviet. Responding to my query, he said that he was a representative from Yakutia. (In the USSR, a person may be nominated from an area other than that in which he/she resides. Yakutia is a large Autonomous republic in Eastern Siberia, bordering the Arctic Ocean. Fedorov's fame as an Arctic specialist would explain his selection by the Yakutians.)

I asked him about his work as a deputy. He said that he was vice-chairman of the Commission on the Environment. (There are 15 commissions, including ones on heavy industry, light industry, problems of youth, problems of women, and culture.)

"Actually, it is in the commissions that most of the work is done," he explained. "There are very thorough and often prolonged investigations made by the commissions; and at the plenary sessions of the Supreme Soviet, reports are made of the decisions the commissions have come to. Our plenary sessions are very brief, lasting only a couple of days, so Western propaganda calls the Supreme Soviet a rubber stamp body. But you can't seriously study and

* Now the USSR State Committee for Hydrometeorology and Control of Natural Environment.

debate problems in a meeting of 1,500 people" (the combined membership of the two houses of the Supreme Soviet: the Soviet of the Union and the Soviet of Nationalities).

"Our commission is particularly busy in the autumn, especially for a month or more before the State Budget and Economic Plan for the next year are finalized. During that period, we select those industries with the most serious environmental problems—perhaps as many as ten at a session. The respective industry ministers are summoned before the Commission, which goes thoroughly into the environmental situation and determines what improvements should be made. The Commission recommends that these steps be taken—and there is plenty of pressure exerted for compliance: failure to do so may result in the replacement of the errant minister.

"Recommendations of specific commissions are taken up by a joint meeting of representatives of all the 15 commissions, and when they are adopted they have something like the force of law. Indeed, they participate in the preparation of major pieces of legislation, such as those on mineral resources and on forest resources, which were recently passed....

"At a different time of the year, the Environmental Commission meets for perhaps two months to study a particular problem in depth. This year, for example, we went into the environmental problems of Azerbaijan. As a result, there was sharp criticism of the Union Republic government and insistence on decisive corrective action."

Azerbaijan is a Transcaucasian republic bordering on Iran and the Caspian Sea. It is famous for the Baku oilfields, the world's most productive at the turn of the century. Now most of the oil is produced offshore, in the Caspian, and this work is being extended. The republic's major industries are chemical, based largely on petroleum. Naturally, this gives rise to major environmental problems.

Fedorov explained that his commission exerts pressures somewhat like those of the Environmental Protection Agency (EPA) in the United States. I should think that in the long run, their pressures would be more effective than those of the EPA because of the difference in the social systems. The U.S. Government, dominated by business representatives, tends to be extremely lax in enforcement actions directed against corporate interests. Furthermore, the business commu-

nity organizes to combat environmental regulations, to obtain looser standards, and to delay their enforcement. Executives systematically complain about "overkill".

It would be naive to think that there are no similar problems in the Soviet Union. Undoubtedly there are cases where executives prefer spending available funds for other measures first and for environmental control measures later, believing that "diversion" for such measures would interfere with exceeding their plan, obtaining bigger bonuses, etc. However, such resistance is passive: there is not and can not be any of the organized industrial opposition to major environmental control measures, such as occurs in the United States. And pressures for improving the environment come not only from the center, but also from workers and local populations. There can't be a situation such as occurred recently in the United States when the United Automobile Workers Union joined the auto companies in opposing strict emission standards because management convinced them that workers would lose jobs.

At the end of our discussion about this, Fedorov remarked: "I don't know why we do not publicize the work of the commissions in more detail. There is nothing secret about it, and publicity would give a better understanding of the real operations of Soviet democracy."

Membership in the Supreme Soviet is an unsalaried job. While it is in plenary session, or when committees are meeting, members are paid their regular salaries from their regular place of work. But there is no question of big money being involved, either in election campaigning or in legal and lecture fees, or payoffs by lobbyists. Nor is it a permanent career. The principle currently in effect is to turn over at least one-third of the members at each election. But it IS an honor, and to be elected to the Supreme Soviet is a recognition of a person's creative activity and a testimony of confidence in his/her ability to contribute to the development of the state.

The Supreme Soviet of the USSR and the Supreme Soviets of the Union republics are regarded as a major means for achieving the objective of involving the entire population in the work of government and, through participation, educating the people in problems of state. In this connection, the Supreme Soviet is merely the highest body in a network of national, republic, district, city, borough, and village

Soviets. Altogether there are 2,222,000 elected members of the Soviets. (*SSSR v Tsifrakh*, 1976, p. 15.)

In the United States, there are 522,000 elected officials, including the President, members of Congress, governors, mayors, etc. (*Statistical Abstract of the United States*, 1977, pp. 503, 505.)

The majority of members of the Soviets are workers and collective farmers. The overwhelming majority of members of the U.S. Congress are capitalists, corporation lawyers, and the like. There are practically no workers, either from industry or farm.

Women comprise about one-third of the deputies to the USSR Supreme Soviet and the Soviets of the Union and Autonomous republics, and nearly one-half the deputies to the oblast and local Soviets. There are no women in the 100-member U.S. Senate and only 16 out of a total of 435 in the House of Representatives. In the Soviet of Nationalities, each Union republic has equal representation, and each Autonomous republic and smaller national area is guaranteed representation far more than proportional to its population. In the Soviet of the Union, representation is proportional to the population of each republic. We met a number of women in high places in government and in enterprises during our travels.

The whole system guarantees equal political representation of all national and ethnic groups in the USSR, in stark contrast to the situation in the United States, where Blacks still constitute less than 1 percent of the total number of elected officials. (*Economic Notes*, May 1978.)

In the USSR, candidates may be nominated by branches of the Communist Party, the Young Communist League (Komsomol), trade unions, cooperatives, work collectives, and meetings of servicemen in their military units. From all accounts, the nomination procedure can be very vigorous. There is nothing in Soviet law to prevent a half dozen organizations from nominating a candidate each for a single seat, and for these nominees to compete in the election.

In the customary practice that has evolved, it doesn't work that way. Rather, representatives of interested groups meet to confer on various nominees, calling them in to question them on their plans for action if elected, examining their qualifications and credentials, etc.; and agreement is reached on a single candidate. It is likely that a certain

rotation is evolved, whereby a deputy is chosen from one factory at one time and from another the next, or that different groups would divide up the seats at the various levels of representation. At any rate, nominees are not selected on the basis of the amount they have contributed to a political party or to repay some debt of gratitude for favors.

Once candidates are chosen, there is no competition in the election itself. Nevertheless, the campaign is active. The candidates are expected to appear at meetings of all constituents, listen to their proposals and complaints. Then, when elected, they bring to the corresponding Soviets a "mandate" comprising the consensus of instructions from their constituencies.

In this substantive sense, the procedure is much more responsive to public opinion than the U.S. system, which revolves about personalities more than issues, and in which, once elected, the typical candidate no longer considers himself bound by whatever campaign promises have been made.

The single candidate system is much criticized as undemocratic in the United States. But I do not think it is of overriding importance in determining the effectiveness of the system in truly representing the will of the people. They, in fact, have much more say in the choice of their candidates than the average U.S. citizen.

And, by the way, nomination does not necessarily guarantee election. Voters can and sometimes do, although rarely, turn down a candidate. A few years ago I read in *Pravda* the results of elections in all constituencies, from national to local levels. In a certain number of cases the candidates were defeated. That was a tiny fraction of the total number elected. In such cases a new candidate has to be nominated and a new election held.

Also, unlike the U.S. system, a candidate can be recalled by his electors at any time they determine that he or she is not acting in a way to further best their interests. This does not happen often; but such instances are not rare, either.

HUMAN RIGHTS

"Cultural Freedom" and "Human Rights" are prime contenders for the No. 1 cliche of the 1970s, chewed up

and spewed out by every anti-Communist to "prove" the advantages of U.S. "democracy" and to fuel the embers of the cold war into a crackling blaze. Anti-Soviet propagandists point to newspaper exposes of CIA skulduggery, White House corruption, Congressional excesses and Wall Street manipulations as examples of "freedom of the press" in the United States, commenting that such disclosures could not be published in the USSR. And ignoring the fact that in the United States, discovery, publicity and investigation do not lead to the elimination of the wrongdoing. Has the CIA pulled in its horns, or merely covered them with a wig and shod its cloven hoofs with fashionable boots?

The Soviet people would not tolerate such abuse of position and would recall and punish culprits. Letters criticizing all manner of wrongdoing, from incompetence to deliberate illegal activities, are received by newspapers all over the USSR. Each letter is read and its charges investigated. Many of the communications are printed. It is a fact, from our observations, that the Soviet people are the most severe critics of officialdom and have no hesitation in airing their views on every topic.

The whole furor about the lack of cultural freedom in the Soviet Union has been of deep interest to us and to our colleagues. Our artist friends in the United States know the difficulties they have had trying to support their families as artists. It's just not possible, except in rare instances, to be a fine artist: they have to turn to commercial art or to picture framing or, more often, have to make a living in a totally unrelated job, finding themselves in the category of "Sunday" or "vacation" painters.

But many of them have expressed concern about the ability of Soviet artists to paint what they want to. We keep reading in our press about the dissident Soviet writers, and artists, and musicians who claim censorship and unbearable restrictions; who claim non-recognition.

So one of the objects of this trip was to get some information, first hand, about this. We made it a point, wherever we went, to meet and talk to artists and to visit exhibitions and museums. And everywhere we took pictures of pictures, and bought books of paintings, and of architecture, and of sculpture.

Let's concentrate on the three areas of "human rights"

we were able to judge through personal experience: freedom to criticize (in the press and by public demonstration); freedom of artists to paint and exhibit what they will; and freedom of musicians to compose "modern" music.

CRITICISM

It is true that certain kinds of criticism are distinctly limited in the USSR. Public advocacy of the restoration of capitalism is forbidden; racism and expressions of national hatred are illegal, as is propaganda for war or militarism. There are official, legal restrictions.

But nationwide, there is wide freedom of discussion, and much controversy. In fact, much of the negative evaluation by U.S. journalists about the Soviet Union consists of material lifted from the Soviet press. And although their specific details may be accurate, their overall impression is deliberately misleading. Firstly, because in the USSR the positive developments, the accomplishments and progress, far outweigh the mistakes and misdeeds—in reality and in Soviet press coverage. Secondly, criticism in the Soviet press is not merely beefing: serious attention is paid to complaints and proposals for correction, the charges are verified and, where justified, corrective action is taken. In fact, *Pravda* has a regular section called "After Criticism", in which correspondents report what was done to correct a situation previously written up in the paper.

Issues of economic policy, as well as of social behavior, are debated not only in the daily press but in many specialized publications. And I say debated advisedly. There are important differences of opinion concerning planning methods, about incentives and income distribution, on city planning.

During the early 60s, there was widespread criticism of shortcomings in the planning mechanism and a vigorous discussion of proposals for improving it. Tens of thousands of people wrote letters to *Pravda*, and many more participated in the dialogue through other channels.

This discussion culminated in the economic reform of 1966.

Now, again, there is sharp criticism of certain economic shortcomings, with the top leadership among the harshest critics. And again, the pages of *Pravda* are carrying proposals for changes in method. (In the section on oil, I discuss at some length a *Pravda* article setting forth proposals to improve the housing situation in Tyumen, for example.)

On another level, the daily and periodical press is full of specific criticisms of the operations of one or another enterprise, governmental body, Party or trade union organization. Usually, the critics name the particular persons they consider responsible.

Let's see how that operates.

"Never be afraid of criticism," editor Illarion Maximov paraphrased V. I. Lenin in explaining to us the guiding principle of his Sochi newspaper, *Zdravnitsa Chernomorya* (Black Sea Health Resort).

Our discussion about newspapers took place in the brand new modern building that houses the editorial staff in luxury. Each staffer, whether section editor, writer or reporter, has an office—a real office with four walls, not partitions, and a door, a rug on the floor, a desk and typewriter, a comfortable chair and good lighting, bookshelves on the walls and room for personal accessories. Maximov's office was large enough to accommodate, in addition, the 12-seat conference table where we talked with him and several of the section editors.

It was a particularly enlightening meeting because, U.S. propaganda notwithstanding, this newspaper makes a point—almost a crusade—of publishing critical letters and of exposing corruption, law evasions and shortcomings. Editor Maximov, a very large, rugged man with an easy and informal manner, frankly answered our questions: we asked for, and were given, specific examples of exposes currently in the works.

The procedure was explained to us from receipt of the first letter of criticism, to an investigation of the charges by the newspaper, to an article in the press on the subject, which then involved the proper authorities, who set out to apprehend the culprits, and then to the disposition of the case (conviction of the guilty and the penalty—fine or other measures), and finally to the wrapping up of the issue in another article in the paper.

Three letters were chosen at random as examples for us, and the situations were described. One was documented from the original letter to final disposition, and we have

the two issues of the newspaper with the first article in February and the last article in May 1977, shortly before our visit. The three cases:

1. Sochi, a popular resort area, has inadequate public hotel space for the hundreds of thousands of vacationers who arrive without having reservations at the trade union sanatoriums and rest homes. Local residents, like their counterparts all over the world, take in paying guests. They are supposed to abide by health standards and the housing code. But compliance is slack and some householders ignore the set limit of three persons to a room, and allowed more people in one room during the busiest season. Also, in some homes, sanitary facilities are inadequate to meet the standards; and, in some cases, the house host is not too critical if a man and woman are not husband and wife.

The charge of profiteering made in the letter to the editor was investigated, found to be valid, and a critical article appeared. The authorities responsible for housing compliance were alerted, much to the dismay of some local officials, but Party leaders were adamant that the situation be corrected, and discontinuance of the illegal practices was assured.

2. Because of the smiling climate around Sochi, there is a year-round growing season. Thus fruits and vegetables, and especially flowers, can be supplied to other parts of the country, less favored. Sochi, for example, supplies planeloads of flowers to Moscow all winter, and the Russians love flowers and can afford them.

But this condition gives rise to profiteering, too. There are huge hot houses on cooperative and state flower-growing enterprises, but individual ruralites also have hothouses and gardens and grow flowers (and potatoes and fruits and vegetables) on their own private plots. This leads not only to some neglecting their official jobs, but also to their using state facilities for their own purposes: building supplies, electricity, fertilizer, seeds, etc. Then several families get together and appoint a delegate to take all their produce to Moscow; and in one weekend he goes and returns with a huge profit, which is divided among the group.

After the letter and article exposing this practice were published, there was a storm of protests in letters from those concerned. They quoted from the Constitution to the

effect that everyone has a right to his own plot of land – omitting the fact that the state's facilities were being used. It was not too difficult to spot those involved, we were told – in a small town like Sochi (local residents, that is, not the multitudes of tourists), sudden new wealth – in the shape of a new Zhiguli or Volga, e.g. – is obvious. But after discussion, investigation, meetings, etc., the solution agreed to by all parties was the formation of a government-sponsored cooperative trading post to buy the produce and flowers grown by individuals.

3. In most Soviet cities, but more so in vacation centers, there are scores of kiosks and small shops – as there are in U.S. seaside resorts – that cater to the tourist trade. We saw the letter received by *Chernomorskaya Zdravnitsa* pointing out the raft of fires in these shops, and accusing the shopkeepers of arson designed to cover up their shenanigans – filching goods, not recording sales and pocketing the money, falsifying the books, etc. In its February 20, 1977, edition, the newspaper was scathingly ironic about the fact that, despite the evidences of arson – oil-soaked rags, cartons of combustible stuffs, e.g. – investigations by the fire department, the department of trade, the militia, etc., had been fruitless. The newspaper called the responsible officials to book, ending with the question, "Who is to blame?"

There was a fine hubbub, we were told, with city officials, Party leaders, and investigative authorities all trying to pass the buck. The newspaper, and especially editor Maximov, who is a deputy to the district Soviet, insisted on action: the charges were to be answered in a specified time, or all the parties concerned in the case would be called on the carpet.

In the followup article of May 20, the *Chernomorskaya Zdravnitsa* reported that under pressure of the newspaper, the Sochi Department of Internal Affairs conducted a serious investigation, confirming that the events alleged in the first article had taken place. A number of criminal cases were started, and the investigation continued. Meanwhile, the Fire Brigade conducted a fire security study of all stores and restaurants in Sochi, as a result of which 185 leading workers were made to answer for violating rules of fire security.

Another instance:

Ekonomicheskaya Gazeta, as previously mentioned, maintains a control post at Atommash, the huge new enterprise being constructed at Volgodonsk, which keeps a critical watch over activities and makes reports to the public. (See Chapter IV.) Its issue No. 3 for 1978 has a full-page feature on Atommash.

The article describes in detail the operation of this complex. Everything must be of top quality, geared for at least 30 years of service. It will have cranes able to carry 1,200 tons, presses of unprecedented power. Equipment is being arranged in the order of the production process, with an estimated saving of 10-15 percent in the time used to transport the unit from one area of specialization to another. (This is the same principle, in fact, used by General Electric in its turbo-generator plant in Schenectady, N. Y.) Equipment is fully automated for high precision, on an assembly line basis.

Building No. 3, for production of non-standard equipment, instruments, etc., was completed ahead of time in 1976; and the task for 1977 was also achieved ahead of time, with some items of basic production already being turned out.

BUT–and here the criticism started:

The plan of work was too easy, leaving too much "margin" for overfulfillment. There were unused reserves in construction; despite the excellent equipment, productivity of labor was lower than that of other construction trusts operating in the region. Of 495 brigades of workers, only 40 had concluded contracts (under a new system, which I explain in the chapter on Problems–*V. P.*). And of these, six brigades didn't fulfill their contract and eleven didn't have an accounting system.

Earlier the paper's control post had named names of contractors and their chiefs whose sectors were lagging, and many of these had caught up. But two were still behind–the Southern Steel Construction Trust, headed by A. Sychev, and the North Caucasus Transport Construction Trust, headed by P. Dmitriev. The Industrial Construction Trust, headed by M. Efimov, was reported to be sluggish in getting underway with the building of needed housing.

The article explains that the recent completion of an atomic power station, already in operation, also contributed to the rapid growth of Volgodonsk, which has

tripled in population in the past few years. Volunteers from all parts of the USSR are constantly arriving to work on Atommash, an All-Union Komsomol shock (i.e., urgent) construction project. In 1977, marriages were two and a half times and births three times more than in 1973. Thus the Ministry of Power and Electrification, which has overall responsibility for the construction work, must exert great effort to provide good housing as well as cultural and living conditions.

In issue No. 7 of *Ekonomicheskaya Gazeta*, a month later, there was a report on actions taken as a result of the critical article. Three chiefs, the individuals listed in issue No. 3, were severely reprimanded for their responsibility for the lag in work.

We have innumerable other examples of letters to the press and of published articles of criticism. And more keep coming in–and will continue to be printed. As long as there are people, there will be criticism, differences of opinion, and suggestions for alternatives. That is as it should be.

But Western anti-Soviet journalists try to have it both ways: they insist there is no freedom to criticize in the Soviet Union, on the one hand, and on the other they make constant references to shortcomings in all aspects of Soviet life as reported in the Soviet press.

DEMONSTRATIONS

One of the principal criteria for defining "human rights" is the freedom to demonstrate, according to U.S. capitalist sources bemoan the alleged prohibition of this form of mass action to the Soviet people who, we are told, are punished for such overt manifestations of criticism.

Let me relate one experience we had which refutes this.

The day after our arrival in Armenia's capital, Yerevan, we had a meeting scheduled with a member of the Central Committee of the Communist Party of Armenia. The handsome headquarters was in the middle of a lush formal garden, and the whole park was surrounded by a fence. Our car entered through a gate, dropped us off at the portico, then drove outside and parked on the street to await us.

Our visit lasted about an hour; and when we exited

to walk to the car, we were immediately aware of the commotion at the fence–a crowd of about 50 men and women were shouting, waving their arms, and milling around. Intrigued by this development since our entry, we naturally wanted to know what it was all about. We were not molested in any way when we walked through the gate, and we had no way of knowing if any of the shouting was directed at us (probably not), and we found our car a short way down the street. The driver, who had been watching the doings, told us that the demonstrators were from a nearby collective farm and that they were protesting the dismissal of their chairman.

As we turned the corner, we saw an even larger crowd at the side gate, part of the same demonstration. We asked to be informed about details and outcome, of course, and a few evenings later we met Anatoly Mkrtchyan, an old friend who had spent several years in the United States and who was now on the Central Committee of the Armenian Communist Party, in charge of propaganda.

Mkrtchyan said that the incident we had witnessed involved charges against the new chairman of the collective farm, that a committee would be set up to investigate the entire matter, and that, then, there would be a report back to the collective farm which alone could elect a chairman and, by a two-thirds vote, remove him. The investigative committee, and the Party, could only make recommendations.

He did not have details since he had been away and only just returned to Yerevan. But, he assured us that he would write us details and the outcome. He further favored the inclusion of the incident in this book.

As it eventually turned out, the protesters were from a state farm, not a collective farm, and following is the promised letter received from Armenia and explaining the issue:

"Director Sarkisyan headed the sovkhoz named after Mikoyan, in the Echmiadzin raion, for about 30 years. In 1977 he reached 65 years of age and applied for retirement on pension. The leadership of the raion agreed with his request, and a candidate of agricultural science, Ambartsumyan, 40 years old, was appointed as new director of the sovkhoz.

"After this event took place, a group of sovkhoz workers

went to the Central Committee of the Communist Party of Armenia to demand that the former director not be retired. They felt that he had led the enterprise for many years and that the new director, appointed by the raion administration (which, unlike the situation on collective farms, appoints officials of state farms.–*V. P.*), would not be as effective.

"The Central Committee representatives met with the members of the sovkhoz and promised to investigate the situation. However, as the previous director, Sarkisyan, had already gone on pension, and the new director, Ambartsumyan, was objectively fully able to cope with the demands of his new job, the appointment made by the raion leadership was upheld.

Actually, several months have passed since then; and the new director has shown his competence, and has already established authority over the workers of the sovkhoz as a knowledgeable specialist and experienced organizer."

ARMENIAN HOMELAND

One may readily see from this incident that the Armenian people are not inhibited. And they are most vocal about expressing their pride in their homeland, *Soviet* Armenia.

The equality achieved by scores of major and hundreds of minor nationalities is a Soviet accomplishment unapproached anywhere in the world. And it is taken as a matter of course. Nobody made a point to me that the top people I met were Buryats, or Jews, or any other nationalities formerly persecuted and trampled in Czarist Russia.

The most vivid example of this was in Armenia. Soviet Armenia comprises only a part of the Armenian lands that had once belonged to Armenians. Millions of Armenians are scattered around the world.

The Soviet Armenians are tremendously proud of what they have accomplished, in cooperation with the other Soviet peoples, in building a prosperous, verdant, industrialized Armenian socialist republic. AND ARMENIANS ALL OVER THE WORLD SHARE THAT PRIDE. Many of them visit. Wealthy Armenian businessmen bring historical documents and momentos to Armenia for safeguarding, in the national homeland.

And as living standards rise in the Armenian SSR, the contrast deepens with conditions in most countries where other Armenians reside. More and more they are seeking to become part of the forward process by immigrating to Soviet Armenia. In recent years some 200,000 Armenians from other lands have come to live and work in Soviet Armenia, more than the number of Soviet Jews lured by the pull of another type of nationalism to Israel and, more recently, to the U.S.

There is a long waiting list of Armenians who want to enter the USSR to live. They are admitted as quickly as housing can be constructed, enterprises can be organized for them to work in, and other facilities provided for a full life. Thus immigrant Armenians do not face the traumas of unemployment, lack of housing and other features of capitalism which greet immigrants in the West, including Soviet emigrants who go to Israel, Western Europe and the United States.

NATIONAL RIGHTS AND ECONOMY

Each union republic has its own planning agency, jurisdiction over a substantial part of the industry in its area and of large allocations from the State Budget of the USSR. With that, of course, goes responsibility for successfully carrying out plans in its area. This decentralization of authority, while not without its problems, encourages the full development of particular national talents, resources and initiatives, often with important positive feedback to the entire USSR.

Thus Byelorussia has distinguished itself with new organizational and incentive measures which have brought about above-plan results during the late 1970s and provided guidelines the whole country is using to solve the crucial problem of concentrating capital investments and completing them on time (see Chapter XI).

The two smaller union republics we visited in 1977 both have excellent economic records. Industrial growth in Armenia during the four years 1976-1979 was at an annual rate of 8.0 percent compared with 4.7 percent for the entire USSR, and above the five-year plan pace. Obviously signs of poor performance at the one plant I visited there (Chapter XI) were not typical. And Leonid Brezhnev, on

behalf of the Central Committee of the CPSU, congratulated the farmers of Armenia for their stellar accomplishment in overfulfilling plans for all the main lines of farm crops in 1979. (*Pravda*, December 15, 1979.)

ARTISTS

The ballyhoo about Soviet artists' restraints and restrictions has probably had more publicity in the United States than any other canard, with the exception of "anti-Semitism". So it is important to know what the situation is, really.

We saw examples of every conceivable style of contemporary visual arts and crafts on our 13,000 kilometer trip – from so-called socialist realism to impressionist, cubist, mystical, surrealist and, in different republics, modern interpretations of traditional forms, some very stylized, some very imaginative. And, propaganda in the United States to the contrary, there was a great deal of abstract art – as non-objective as any you can see on Madison Avenue or SoHo in New York or in Haight-Asbury in San Francisco or at the Hirshhorn Museum in Washington, D. C. In fact, we met an abstractionist who has been awarded the title of Merited Artist of the USSR.

Of course there were also examples of healthy and stolid men and women engaged in the agricultural and industrial tasks and we saw formalistic and stilted group portraits of sports figures and of cosmonauts. In fact I think too many of these works are sent abroad in cultural exchanges – at least those we have seen in New York. They tend to strengthen the taunts of "pedantic" and "unimaginative" in connection with contemporary Soviet art, which is too bad because we saw many examples of new techniques, of experimentation with new mediums. The monumental sculptures commemorating war victims and the heroism of the Red Army were inspired and inspiring. In this sphere, Soviet artists have developed a public art form as forceful and original, and as provocative, too, as the Mexican muralists of the revolutionary period of Siqueiros, Orozco, Rivera.

Stained glass and mosaics are other mediums that show vigor and inventiveness, and as in Mexico, murals are appearing on more and more buildings, exterior and interior.

Some are akward and dull, but many are startling. captivating and vivid.

There are innumerable paintings, drawings and sculptures of Lenin, some very good. But there are also expressionistic and creative landscapes, still lifes, and portraits of people that could not possibly be considered, sneeringly, "socialist realism".

Humanism would best express the overall content of Soviet art, although the non-objective abstracts on display – especially at the Museum of Contemporary Art in Yerevan – would he more appropriate and applicable as fahric design than as pictures at an exhibition.

However, among all of thc paintings, drawings, crafts, sculptures and illustrations we saw, what we did NOT see were any examples of pornography, of decadent, subjective despair. If U.S. art critics (!) consider this a lack of cultural freedom, let me quote from a little pamphlet by Grigory Oganov, called *Freedom of Art Under Socialism*:

"In their unremitting attacks on the Marxist-Leninist concept of freedom and of socialist democracy... propagandists harp on the accusation that under socialism, right and liberties are curtailed, that there exist legal curbs conflicting with the idea of 'doing-as-one-likes'.... *Our legal institutions limit not freedom, but abuse of freedom.* (My emphasis – *E. P.*) For we know only too well the dangers of such ahuse.

"So don't tell us that the categorical ban imposed in our country on propaganda of pornography or the misanthropic ideas of fascism and war, on gambling dens and brothels... curtails freedoms and impinges on man's natural rights. Nothing of the sort! It would he far more useful to frame the question of freedom as follows: how does the bourgeois state shield its citizens from the corroding impact of the free enterprise of the mammoth gangster corporations that prosper by organized crime, gambling, racketeering and the drug traffic?"

From our observations, and from what artists we met told us, artists in the Soviet Union live exceptionally well, produce what they want to in the style they prefer, and are firm advocates of their socialist system.

I asked all sorts of questions: how does an artist get jobs, can artists live on their professional work, how are exhibits arranged and who pays for them, who determines the cost of a work of art, how does an ordinary resident go about buying a painting, how are artists chosen for commissions. how important is the Artists Union and how does one join, etc.

Since this obviously is not a treatise on art. I can't go into all the issues here; but by pursuing answers to my questions and by visiting studios and interviewing illustrators, painters, sculptors, and Artists Union officials from Siberia to Armenia to Moscow, I am convinced that a Soviet artist has more of an opportunity to make art a career and to make a living – and to live really well – as an artist than artists in the United States (except for the occasional Wyeth or Rockwell or Soyer).

Let's consider the overall picture.

The Artists Union is the most influential body, and it is through the union that member artists get commissions. And let it be understood that there are many more commissions than there are artists to fill them!

Artist Tair Salakhov, First Secretary of the Artists Union in Moscow, told me there are 15,500 professional artists in the Soviet Union, and 4,000 candidate members. Officials of the Union are elected by secret ballot, and rules and rights are voted upon by the membership. There is a secretariat made up of the chairmen of the Artists Union of the USSR, plus elected members.

The Artists Fund is the production base of the Union – and it is the only organization in the USSR that doesn't pay taxes. The Fund maintains 405 enterprises covering all arts and crafts – from painting to bronze casting, from cottage crafts to graphics and book illustrations and fabric design and advertising. It encourages artists, purchases their output and arranges sales and exhibitions. For example, it has several galleries in Moscow (and in other Soviet cities, too) where works of contemporary artists are displayed for sale, and anyone can come in and purchase them. A commission of the Fund sets the price, and 75 percent goes to the artist. This is in addition to the amount the Fund has paid to the artist as its purchase price. With the 25 percent of the sale price returned to the enterprise, plus part of its allocation, the Union puts up rest homes for artists, housing centers, etc. The Fund has a turnover of 200 million rubles a year.

The Fund also arranges commissions for art work. For

example, from 1.5-2 percent of all funds allocated for construction is for artistic embellishment–whether for housing, a swimming pool, an administrative building, a railroad terminal or an airport: murals, sculptures, paintings, fountains, etc. In addition, the Soviet Union is a huge country, the largest in the world. And although great strides are being made to expose people in the far off areas to art and other forms of culture, there are still many places that do not have an art museum–although the number of small towns that do have such centers is astounding. And where there are no permanent exhibits, traveling art shows are hung for a month at a time–that is, they are changed monthly–in the town hall, houses of culture, or other people's centers. But new art museums have to have works of art, and these are supplied by the Artists Union from exhibitions in various republics. So far the Artists Union. through the Artist Fund, has set up 250 art museums to show contemporary art.

How does an artist get into the Artists Union? Any artist can apply, and that category is much broader than it is in the United States, including not only so called fine artists but also fashion and textile designers and book illustrators who, incidentally, are much respected. Many of the country's leading artists are proud of their book illustrations. Also included are sculptors, commercial artists (they are not called that, of course, but the designation should be clear), craftsmen, graphic artists and architects.

Usually application is made on graduation from a specialized school of art, but such a background is not required. The applicant shows a portfolio of work and must have shown in an exhibition–not the obstacle it is in the United States because in the Soviet Union, art schools, community centers, district headquarters, social centers, vacation resorts and many other places, including galleries run by the Artists Fund, have shows. In the five years prior to our visit, the Union alone organized 15,000 exhibitions, visited by 30 million people.

After application, there is a three-year period of candidacy; and since there is a great interest in developing talent, especially among the youth, the Artists Fund makes a special effort to see that candidate artists get commissions. They are also encouraged to experiment and develop new techniques. Then, after three years, candidates submit

another portfolio and, if their work has shown development, if they have continued to produce, have shown in exhibitions, and if reviews have been favorable, they are in the union.

From the paintings I saw at exhibitions and in museums, an applicant does not have to be a Rembrandt, or a Cezanne, merely competent.

I did not have a chance to speak with any apprentice artists. The artists we met were all established, long-time members of the Union, and very good. In any country, at any period, they would be designated as outstanding and distinguished, and we were very pleased to meet them.

Since we are concerned with economics as well as with the concept "freedom", let me describe Peter Shapiro, a portrait sculptor of first eminence. He is a vigorous, effervescent man with an engaging personality that accepts and enfolds friends on sight. Non young but not yet middle-aged, he has a mop of black wavy bair and laughing black eyes, in contrast to the calm blonde beauty of his equally friendly wife, Angela–his model and helpmate.

His studio was on the below-ground-level floor of an apartment building conveniently located on a quiet, tree-lined street near the Moscow River. There is a very large room lined on three sides with the busts of famous people, from all over the world, whom he has sculpted–Fidel Castro, Salvador Allende, V. I. Lenin and N. K. Krupskaya, Dmitri Shostakovitch, Van Cliburn, Nikolas Guillen, Gus Hall, Lev Tolstoy, and Beethoven in many different aspects. This is the room in which he works, and it contains his model stands, tubs of clay, cartons of plaster, and of powder, the tools of his trade and, along the fourth wall, his desk. A second room, about half the size, has a couch, a low table and several chairs. The walls are covered with autographed photographs of his subjects, some sketches and clippings. In addition, there is a bathroom.

For this very extensive suite, Shapiro pays 25 rubles a quarter. His apartment, which we did not have time to visit, was being reconstructed to his specifications–it had two rooms, and he was having the dividing wall removed in order to have one large room. Of course, kitchen and bathroom are not counted as separate rooms. This apartment was less expensive than the studio–I don't remember exactly how much he paid for it. But I do know that the

Shapiros have no financial problems: he does not have a car because he considers it a nuisance and prefers to take taxis, which he does with complete abandon. He called for me three times in a cab and we went for considerable distances. Once, when he left me, he was to go on to the Artists Union to sign a new contract for another sculpture.

I also visited the workshop of V. N. Guraev, who looks like a genial Santa Claus after a visit to a hair stylist. His snow white hair and beard were neatly trimmed, his eyes were smiling. He is a terrific artist, and I was captivated by his paintings, hung all around the walls of his top floor studio.

It was a very long room, but quite narrow – about nine feet – and along the outside wall were high windows and a skylight that went almost the whole length. There were easels, drawing tables and, on the floor to dry, a series of water color sketches, new illustrations for a forthcoming book. He lives in the same building, on another floor, in an area that seemed to be a center for artists, as several of the apartment buildings showed paintings in their street-level store fronts.

We met several other artists – Alexander Trishin of Novosibirsk, Greku of Moldavia, Megran Sosoyan in Yerevan, all distinguished or honored artists of the Soviet Union – and asked them about their work and their lives, but I did not visit any other studios or artists' homes. It was obvious from their manner, their responses to questions, their confidence and dress, that artists are especially respected members of Soviet society and that their standard of living is one that many other categories of Soviet people are striving to reach.

MODERN MUSIC

In Leningrad for the white nights, we were very pleased, on our first evening there, to be taken to the main concert hall, the home of the Leningrad Philharmonic. In 1960, we had heard a memorable program – Beethoven's Fifth and Shostakovich's Fifth, with Mravinsky conducting. This time, we were unable to find out in advance what the program would be; but when we arrived at the hall, we discovered that it was to be all-Shchedrin, with the composer as guest soloist for his piano concerto. We also found that the performance was not only sold out, but that there were seats on the stage level, in the wings, and along every inch of space on the sides. There were also about 200 standees.

Our seats were on the stage level, in the wings in back of the basses. And for one thing we were grateful as the concert progressed that we were not in the wings on the other side, behind the percussion section.

Neither of us is enthusiastic about modern atonal cacophonic "music". Especially when it is very very loud. And Shchedrin's compositions are very modern, very loud, with lots of percussion, especially drums and cymbals. Comparable, in every respect, to the most abstract, non-objective painting. Nonetheless, Shchedrin is a very popular and respected contemporary Soviet composer. Shchedrin himself was given a roaring reception, and at the end of the concert, he was given a standing ovation, the applause continued for at least 10 minutes, and there was a rush of fans to the platform.

We didn't especially enjoy the music, but were glad to have attended, to have seen – and even heard – proof that in music, as in the other art forms we had surveyed, there is freedom to experiment, to express, to perform.

Chapter IX

UNIONS AND LABOR CONDITIONS

In order to understand labor conditions in the USSR it is necessary to know the operation of the trade unions. In 1977 there were 113 million members of Soviet unions, five times as many as in the United States. Almost all wage and salary workers belong to unions, which are organized on a broad industrial basis. All workers and employees of an establishment, from director to unskilled laborer, are members of the same union; and the focus of union activity is at the enterprise level. There are 700,000 local trade union organizations, 2 1/2 million trade union groups, and many million union activists.

I visited the headquarters of the All-Union Central Council of Trade Unions (AUCCTU) in Moscow. The building is old and not very impressive – it doesn't compare with the new AFL-CIO headquarters in Washington. But the Soviet organization that occupies it exercises much more influence than does its American counterpart.

In Moscow, the AUCCTU and the State Committee of the USSR for Labor and Social Affairs jointly set wages and determine the basic rules concerning labor conditions. Theirs is a cooperative relationship, not one of antagonistic bargaining between the unions and the government, which is, of course, the dominant employer. The total amount of wages is determined as part of the central planning process; and wage and salary incomes, plus the incomes of collective farmers, pensioners, etc., are related to the projected supply of consumers goods. Nobody would benefit from a disproportionately high *general* wage scale which, under Soviet conditions, would result in shortages of goods and hidden price increases.

The situation is unlike that in a capitalist country

where a higher general scale of wages can be at the expense of profits, and where the purchasing power of the working people, not production capacity, limits consumption. Wage and salary raises in the USSR are set periodically by percentages corresponding to the overall increases in supplies of goods and services. All wages, across the board, are not increased by a few percent a year. Instead, broad occupational groups and sections of the country get substantial raises – as much as 15-20 percent at a time – staggered over a five-year plan period. Meanwhile, many individuals increase their earnings by improving their skill classifications, increasing their productivity, the quality of their work, etc. The detailing of wage scales according to occupations and industries is worked out mainly by specialists on the State Committee, but they have to work closely with AUCCTU. All major decisions are taken jointly and issued in the names of the chairmen of the two bodies. All laws concerning labor, at any level, must be signed by the corresponding trade union and government bodies. Basic wage decisions are signed by the Council of Ministers and the trade unions.

Nationally, the trade union establishment also does important educational work in training leading trade unionists. I spoke at an international conference held at the large, modern, higher trade union school in Moscow. That school building was a much larger structure than the AUCCTU headquarters, and it hosts foreign as well as Soviet students.

AUCCTU also publishes *Trud*, a full-sized nationally circulated daily, with a circulation of more than 8 million. It is involved with research institutes popularizing more efficient and effective work methods, substituting machinery for heavy manual labor, enhancing scientific and technical progress, and generally moving towards ending the difference between mental and manual labor.

The leading unionists I talked to said that the main task of the unions is to stimulate participation of the rank and file in the management of enterprises and in the economy as a whole. This may be the most decisive difference in the situation of workers and their unions between capitalist and socialist countries.

In the United States the unions have to struggle even to find out what is going on in the enterprises, and the corporations firmly exclude the unions from any voice in

determining production, equipment, or any other questions in relation to operations, which are held to be "management prerogatives". Unions in West Germany, where they are much stronger, have won "co-determination" rights, but this concession has proved to be largely formal, with minimal actual union input into management decisions.

In the Soviet Union, all production and related plans are discussed in shop meetings throughout the enterprise. The workers are expected to participate actively in carrying out the plan and in helping to formulate it. They are encouraged to make proposals about operations, and often their counterproposals are adopted. At the enterprise level, acceptance by the trade union committee is a requisite for finalization of the plan, which is then incorporated into the annual collective agreement.

Vasily Vavilkin, of the Organization Department of AUCCTU, believes that the role of the unions will steadily increase to a point where it will become decisive. In a future communist society, he says, there will be no state apparatus. The people themselves will rule directly through public organizations. And the trade unions are the largest of these.

I have often read and have been told that a plant manager cannot fire a worker without the consent of the plant committee of the trade union. More than one Soviet plant official has complained to me about this on the ground that it hampers labor productivity.

The unions have a different approach. They are organizations for educating and raising the social consciousness of workers, said Vavilkin. The task is not to get rid of workers with low understanding—"lazy" workers. It may be that they just do not fit into their particular jobs. The trade union is interested in finding out why, and if there is a valid reason, getting him transferred to another job. The unions want all workers to work well. If a worker is fired, he will also work badly in a new job which, with full employment, he will have no difficulty in finding. The main thing is to persuade laggards to work better. Their behavior is discussed in union meetings; there are "comradely courts" consisting of the best, most respected workers, where poor behavior is discussed. These courts are more effective and have more influence than administrative measures. Material incentives are also important in bringing lagging workers up to par. Within a workers' brigade, premiums are allocated by the brigade members, so a poor worker may get no premium.

Much attention is now being given to the *Nastavnichestvo* movement, in which experienced middle-aged workers act as advisors to young workers and help them not only to master the job, but also to participate as a social member of the collective.

I've been thinking about all this. A key communist objective is to develop a "new man" with an outlook and way of life appropriate for a communist society. Communists disagree with the catch-phrase: "You can't change human nature." They believe that human nature is being transformed in positive ways as social relations are perfected and a sufficient material foundation created. This has nothing in common with mind control, propaganda manipulation, eugenics, cloning, or any of the actual and science-fiction methods of creating obedient cogs, monsters, or an elite.

It's a transformation wrought by the people themselves, as their values broaden and the possibility of realizing them increases, as the harmony of interests of the individual and society becomes clearer, more obviously beneficial, as the opportunity of each person to be a significant part of things becomes more real.

The inefficiency involved in carrying along, patiently convincing backward individuals is a cost of this process, but a lesser cost than the capitalist practice of expelling laggards from society, of throwing millions on the scrap heap, and not necessarily "lazy workers" by any means.

In two decades of periodic visits to the Soviet Union I've tried to estimate progress towards the transformation of people. I do believe it's significant. I believe that the majority of people have in varying degrees the outlook of people wanting to participate cooperatively in building a better, socialist life for all. And I believe that there are increasing millions who feel this the main goal of their lives.

I return to this theme in the last chapter.

The trade union committee of an enterprise has the right to insist that the director be fired if he systematically violates rules concerning labor conditions, safety and health standards, or if he mismanages the enterprise.

But according to Vavilkin, this authority is generally held in reserve as a final resort that isn't used. After all, he said, directors usually were formerly workers in the same or related enterprises, so they understand the demands of the workers. He mentioned only one case he could recall of a director of a plant being fired at the trade union's demand, this one for violating safety rules.

But chairman N. Simchatov of the Electrical and Power Workers' Union claimed that the unions' authority to unseat poor managers is much more actively utilized. He said, during a visit to the United States:

"If two-thirds of the workers vote 'distrust' of a management official, he is automatically fired." In 1977, his union "expressed distrust of 600 managers in the electrical industry. Ninety percent of the managers are out of the workers ranks, but, frankly, some tend to forget where they came from." (*UE News*, July 30, 1978.)

True, Simchatov was speaking of management officials at all levels, while Vavilkin was speaking only of the top plant directors. From what I read in the Soviet press, I think that unions, Party organizations, journalists, are all active in keeping managers "on their toes"; but that usually recalcitrants are reprimanded or fined, and rarely fired from their jobs.

For example, there are more effective ways of getting implementation of safety measures. The trade union technical inspectors have the right to tell management what has to be done to eliminate safety hazards and to set a time limit for compliance. If the faults have not been corrected, a fine is levied, which the director must pay out of his own pocket. The inspectors take into account the executive's financial position in levying the fine.

One of the most significant differences between U.S. and Soviet unions is in the attendance and content of local meetings. American workers are all too familiar with the cut-and-dried character of many local meetings, especially when they are run by entrenched bureaucrats indifferent to the needs of the workers. Agendas are pre-set to be tied up in trivia, to avoid the possibility of serious discussion of workers' grievances. As a result only a handful of members—cronies of officials—customarily attend. An attendance of 10 percent is exceptionally high.

A Soviet union meeting cannot make a decision unless

a quorum of two-thirds of the members is present. Usually, said Vavilkin, 70-80 percent come to meetings. Another thing—there's no dues checkoff. Union activists collect dues in the shops. It's an important activity in stressing the independence and significance to the members of their unions.

In the USSR, the formula—government, Party, trade union—is mirrored at all levels. At a typical enterprise I would be introduced to three key individuals, the plant director and the heads of the trade union committee and the Party committee. The latter organizations are self-financed via membership dues; and with their large membership, finances are not a problem. Especially since there is not a large paid bureaucracy. At each large enterprise, usually, the Party and trade union leaders are the sole full time employees of their respective organizations, elected by and paid by their members.

What is the difference between the functions of the Party and the unions? The union is concerned with practical enterprise operating problems, with providing housing and services to workers, with ensuring their health and safety. The Party is concerned with guiding, inspiring and educating the workers, with keeping them informed about political events, with working out the general strategy of development in an enterprise, a city, or Union republic, as on the national level. The trade union committee also participates in educational and mobilizing work.

SURGUT POWER PLANT COLLECTIVE AGREEMENT

I have a copy of the *Decree of the Rights of Workshop, Factory and Local Trade Union Committees*, as issued in 1971 by the Presidium of the Supreme Soviet of the USSR. However, a detailed example of a specific plant's contract provides a better idea of what these rights mean than the general language of the Decree.

I also have the *Collective Agreement of the Factory Committee of the Trade Union and the Administration* at the Surgut Electric Power Station for the year 1976. It closely follows the general rules, and may be presumed to be typical, except for specifics relating to the industry and the Far Northern location.

It is a substantial document of 85 printed pages, with

6 sections and 14 appendices. Every paragraph specifies who is responsible for carrying out, its provisions: the administration, the union, or both together; and, where relcvant, specified officials.

It has features in common with a typical U.S. labor-management contract, such as wages, working hours, "fringe benefits", working conditions. But there are important differences.

In the United States, union contracts have little or nothing to say about production, which is regarded as a management prerogative. The Surgut agreement includes the main features of the production plan, both management and union take joint responsibility for carrying it out, and both participate in distributing the rewards for succcss. Remember that, quite unlike the U.S. situation, while the pant director "bargains" for the "administration", he himself is a member of the union who owns no stock and rceeives no dividends, so his personal financial interests are on the side of the workers. Thus, while there may be disagreements, the process is not basically antagonistic.

The Surgut agreement contains much more than a U.S. contract on workers' health and safety; but it contains nothing about management powers to discipline or discharge workers, common in U.S. contracts. The little in the agreement about penalties for breaches of discipline is specified as a joint responsibility of the union and management, with the union having a veto power.

There are sections, usually missing from U.S. agreements, that cover provision of housing, meals on the job, medical treatment, vacation details, special protection for women workers, and for education and training of young workers considerably beyond the apprenticeship provisions of some U.S. contracts.

An appendix describes in great detail the rules for distributing the year-end bonus, the "thirteenth month's wage", which is shared by all who have been on the job a year or more. This dividend is related to base pay and length of service: a ten-year veteran will get double the bonus of a worker with one or two years experience having the same base pay. Workers who do an outstanding job, including inventors and rationalizers, will get additional bonuses of 20-30 percent. Violators of labor disciplinc,

chronic absentees, etc., may get a reduced bonus or none at all.

The agreement specifies that all rewards and honors be presented with appropriate ceremony. The public honoring of outstanding individuals and collectives of *workers* is a special feature of Soviet life without counterpart in capitalist countries. I am convinced that such honors are highly prized and serve as a stimulus for millions of people.

The agreement requires the administration and the factory committee to call a general meeting of workers to judgc violations of rules of labor disciplinc and social order. Permissible penalties include being moved down on the list to receive improved housing, getting a vacation at a less favorable time, and even being transferred to a lower-paying job for a period of up to three months. There's no mention of dismissal. The main effort is, through conferences, to help workers solve personal and job problems that interfere with performance. Punishment, certainly mild in comparison with that meted out by U.S. employers, is used as a last resort.

PLAN FOR THE YEAR

A brief introduction to the agreement tells of the successful completion of the previous five-ycar plan, of doubling the plan to bring new capacity into operation. of a 36.7 percent increase in electric energy output in 1975, and of overfulfillment of the plan for production of heat. It says that through satisfactorily exploiting the energy units, the Surgut steam power station collective supplied electricity to the entire economy of the Ob raion and fulfilled all indicators of the state plan.

It then summarizes the 1976 task for producing kilowatt hours of electricity and gross calories of heat, for increasing the percentage of utilized capacity, for saving fuel and economizing production—the last to the tune of 4.8 million rubles. It says:

"The present collective agreement aims to mobilize the collective to carry out the 1976 task. It is a two-party document, concluded by the leadership of the Surgut steam power station: the 'Administration', and the collectivc of workers, engineering-technical staff and clerical employees

of the power station, through the factory committee of the union – 'Zavkom'."

The first section of the agreement begins with key goals of the 1976 plan: production of 9,133 million kwh of electricity; a fuel cost of only 0.29 kopecks per kwh; employment of 1,377 workers and a wage fund of 4,870,900 rubles; capital investment of 19.6 million rubles, including 17 million for productive purposes and 2.6 million for housing, cultural and service facilities. Note that half as much is allocated for workers' capital expenditures as for their wages. That's quite a "fringe benefit"!

The agreement gives considerable detail about the plan for scientific and technical progress, for saving fuel, for making repairs. It projects a saving of 220,000 rubles by the introduction of rationalization proposals and inventions of workers. To reward these workers, the administration is obligated to set aside 7,000 rubles, a little more than 3 percent of the expected annual saving. Apparently, the low percentage is set according to a national scale. I've never been able to understand why so parsimonious a reward is set. It seriously limits the material incentive for working out more efficient methods or developing inventions, and compares unfavorably with the relatively liberal bonuses paid for routinely coping with the plan.

Another 5,000 rubles are set aside for rewarding winners in socialist competition. In addition, the winning collectives are to be honored with the Red Banner, presented with the plant's diploma, entered on the honor roll (bulletin board) and book of honors of the plant. As I've indicated, workers take this moral reward very seriously. Still, the material reward seems disproportionately small.

The second section of the agreement details basic wage scales, as well as the "raion coefficient" of 70 percent for work in the Far North and the additional wage supplement of 10 percent per year for the first five years of work completed in the Far North. The Zavkom is obliged to keep strict control over the accurate calculation and payment of wages, and to check the books every quarter for this purpose.

The premium for night work is 20 percent, as compared with the customary 10 percent in the United States. Double time is paid for holidays. For work in heavy or unhealthy conditions, 12.5 percent is added to wages. Since 1976

there has been a further increase in the supplement for heavy or dangerous work. This provision, among other things, is an incentive to managers to install improved safety equipment and automatic lines to eliminate the need for heavy manual labor.

The agreement refers to a national overtime scale. This starts at time and a half for the first two hours, and increases thereafter in the exceptional cases when more than two hours are permitted.

HEALTH AND SAFETY

Section three deals with improving labor conditions, with emphasis on health and safety and on social insurance measures. The details on health and safety are very impressive. One appendix lists management responsibilities for eight specific safety and health-related investment outlays. A guard is to be installed on a milling machine, and platforms are to be erected to make easier and safer the servicing of various pieces of equipment.

Showers and dressing rooms are to be installed in all shops. Drinking water fountains are to be installed, and hot water supplied at sanitary stations. Additional heating is to be provided on the staircases of the main building.

All shops have a resident doctor and nurses. Appendix 11 provides that all workers are to have a general checkup in the shop once a quarter, by specialists in various fields. All workers with ailments are to have a full day's examination and treatment once a month. All workers are to be fluoroscoped. The shop doctors are required to give monthly lectures on health questions.

At the Zion nuclear electric energy plant in Illinois, I asked about medical personnel. There are none. Lawrence Soth, the official who showed me around, explained: "We have telephones. We can get ambulance service in ten minutes. We have arrangements with nearby hospitals. We have first-aid kits, and people who know how to use them."

Doubtless that is sufficient for nine out of ten cases of plant accidents and sudden attacks of illness. Still, doctors and nurses, medical equipment on the spot, can mean saving a life in the tenth case. I have heard bitter complaints from workers in U.S. plants. Workers have

died from heart attacks or machine injuries due to lack of immediate, on-the-spot skilled attention – sometimes aggravated by callous foremen desirous of keeping men working and not realizing the urgency of an attack.

More important than this is the difference between the American and Soviet attitudes toward preventive medicine and general health conditions. In the Soviet Union, these are social responsibilities, incumbent on each employing establishment and enforced by the trade unions. In the United States the individual worker has to arrange for and usually finance such services.

There are other special Soviet health and safety provisions which I believe are rare in U.S. collective agreements, at least in anything like the details provided. For example, in the Surgut agreement, by September 1, all work to prepare shops for the autumn-winter period has to be completed. There is a detailed listing of the special warm clothing and shoes to be provided, by category of worker, free of charge, during the period October 1 to May 15. The listing of occupations to be supplied with special clothing and the description of the clothing for each takes up 23 pages. Much, but not all of this, relates to Surgut's severe climate.

Those who work in harmful conditions are entitled to a half liter of milk daily. Thirty-one categories of workers qualify. Workers on dirty jobs are to be provided with 400 grams of extra soap each month.

Every time a worker takes on a new job or substitutes on a job, he must first be given technical safety instructions at the workplace; and the instructions are to be repeated to all workers monthly, with the chief engineer and engineer for technical security responsible.

All of these obligations for health and safety are the responsibility of management, with the union obliged to check enforcement, to conduct educational work on health and safety problems, to review the work of the medical personnel and the distribution of social security funds.

MORE ON SAFETY AND HEALTH

The ever present danger of maiming or death from accident, as well as from industrial health hazards, is a most urgent issue in American life today. There are fiercely

fought strikes over these issues. Workers have won partial protective measures, and an Occupational Safety and Health Administration (OSHA) has been established in the U.S. Department of Labor with limited powers.

But there has been no overall decline in the annual toll of about 5,000 industrial accident deaths and 2 million injuries in the USA, and no end to the incidence of such killer diseases as "black lung" in the coal mines and "brown lung" in cotton textile mills.

Employers have launched a furious assault against OSHA, and have won vital court decisions which forbid workers to walk off unsafe jobs and prohibit OSHA inspectors from entering a factory without advance arrangements, which permits officials to cover up danger spots.

Labor health and safety are not a political issue in the Soviet Union. Everybody is for it, although not everybody, of course, acts with appropriate practical concern for it. I am not an expert in the field; and marked differences in safety provisions between U.S. and Soviet plants were not visible to me, except for the speeded up pace at some U.S. assembly-line plants, which increases the danger of accidents as well as some occupational illnesses.

Rather to my surprise, Charles Elston of General Electric claimed that Soviet plants he visited are less concerned with safety than those in the United States. He claimed to have seen situations in Soviet factories that would cause "any" U.S. manager to shut down the plant – such as women working at unprotected presses.

At General Electric, he said, workers have safety shoes and must wear protective glasses in the shops. It is probably true that the GE Schenectady plant, a relatively new, high priority plant, has excellent safety conditions, especially since it is so well supplied with special purpose automatic machinery that does not require manual manipulation. However, in the USA and the USSR, some workers do ignore safety precautions, and I did see workers on the GE floor who were not wearing safety glasses. In Surgut, the management also provides safety shoes for workers who need them, and I have no reason to believe that this is unique for the Soviet Union.

It's also true that in many U.S. factories workers tape up the protective devices on machines, because these features

slow operations, and they cannot make the production quotas necessary to retain their jobs.

Improvements in safety conditions in some industries in the United States were won through union-organized struggles. However, 75 percent of U.S. workers are unorganized; and in many unorganized shops safety and health conditions are atrocious. And employers are often alert to take away protective measures if they interfere too much with profits. Thus, an intense employer campaign succeeded in forcing retraction of a strict "no-hands-in-the-die" regulation. How many workers will lose hands or fingers as the price of this "victory"?

The Soviets are particularly conscious about noise pollution, and visiting specialists agree that they have a better record than U.S. enterprises in reducing noise to acceptable limits.

I haven't been in coal mines in either country; but the great labor journalist, Art Shields, has been down in many mines in both the United States and the Soviet Union, and what he has written and said about them is absolutely authentic and reliable.

Coal mines are the worst killers of all industries in the United States. The basic underlying issue in the long strike of 1977-78 was the demand of workers for the right not to work in unsafe mines. That is what almost all of the "wildcat" strikes are about. In the Soviet Union the union factory or mine committee has the right to shut down any operation it considers unsafe. That authority has not yet been won in the United States, except in some isolated cases, which are now in jeopardy as a result of an adverse court decision.

I was particularly impressed by Art Shields' comparison of the operation of automatic cutter-loaders for underground coal mining in both countries. In the United States they are driven full force into the coal seam, giving off a huge cloud of dust, despite watering. In the Soviet Union the whole area is effectively suffused with water, and the cutter-loader slices into the seam, greatly reducing the dust. In this and other ways, Soviet miners have a high degree of protection against the worst killer in U.S. mines – black lung.

True, Soviet safety methods make it impossible to achieve the high productivity of U.S. miners. But doesn't this

illustrate the fundamental fact that well-being of the worker is central to Soviet society, while it has to be fought for against the indifference of industry owners in a capitalist country?

The fact is that U.S. employers want the power to decide unilaterally just how much safety to provide their workers and how much risk to subject them to. When they provide comparatively good conditions, as at the GE Schenectady plant, they want it to be by their paternalistic decision, with no interference from the workers' unions or from an "impartial" government agency. The amount OSHA can do, with its small staff and appropriation, is pitiful at best. If that's "overkill", as employers charge, a slap on the wrist is a lethal blow.

The Soviet Ministry of Public Health has 20,000 safety inspectors, and the AUCCTU another 5,500. These 25,500 inspectors have the right to close factories and impose penalties, to fine and even jail plant managers and industrial ministry officials who fail to comply with the law. OSHA has only several hundred inspectors, with much more limited powers.

The total U.S. budget for labor health and safety measures for fiscal year 1979 comes to $273 million. The corresponding Soviet budget for 1976 was 2,005 million rubles, and it has been increasing year after year. (*Budget of the United States Government, Fiscal Year 1979*, p. 188; *SSSR v Tsifrakh, 1976*, p. 212.)

Between 1970 and 1976, in the Soviet Union, injuries were reduced 19 percent. While not giving exact figures, the Soviet statistical handbook claims "The Soviet Union is one of the countries with a low level of industrial injuries". (Ibid.) In a more recent popular publication the claim was made that the Soviet Union has the lowest rate among industrial countries.

Not that the situation is ideal. Some of the human problems that interfere with labor safety are common to both countries. Addressing the Trade Union Congress in 1977, Leonid Brezhnev said: "Can it be said that the situation as regards labor conditions is satisfactory? Unfortunately the answer is no. It sometimes happens that the management and the trade unions turn a blind eye to serious drawbacks, regard measures to improve labor conditions and safety as something secondary, and tolerate cases of

neglect in meeting the obligations written down in collective agreements."

A decree was adopted in 1977 to improve labor protection and safety regulations. But even with good enforcement, regulations alone cannot guarantee labor health and safety. Brezhnev put it thus:

"Our aim can be formulated as follows: from safety rules to safe technology. We have embarked on that road and will undeviatingly pursue it. The Party regards the technical reequipment of industry, agriculture, construction and transport, for which vast sums are being allocated, as the decisive means of improving labor conditions and making all places of work safe and pleasant to work in." (*Pravda*, March 22, 1977, Novosti Press Agency translation.)

MONOTONY AND VARIETY

The problem of monotonous work in mass production industries of an assembly line nature is common to capitalist and socialist countries. The fundamental approach in the USSR is to make work interesting and creative through automation, raising the qualification of workers to that of technicians supervising automated production lines.

In the United States and in the USSR some use is being made of devices to vary the work of individuals on an assembly line. General Motors is installing "personalized modules" on a new Oldsmobile assembly line in Pontiac, Michigan. Each module will have everything the worker needs for his job–including personal lockers, work shelves, hoppers–and the worker will have flexibility to arrange things to his individual convenience. (*AMM/MW News*, Feb. 1978.)

In the radio factory we visited in Riga, on one line of high quality radios, the workers had turntables with a variety of parts. Each worker could go through a whole production cycle over a period of time, slowly turning the table to the new set of parts.

Flexible working hours are also being tried in both countries. At various enterprises in the city of Kohtla-Järve, Estonian SSR, office workers may choose their own working schedule, within certain limitations, so long as they put in the required 41 hours per week. The workers find it helps them to avoid rush-hour travel and the tension

of having to check in on time every day. It also makes it easier to handle child-care arrangements, shopping, etc., enables them to work when they feel best, or not work when they want to finish a certain personal project. (*New York Times*, March 20, 1978.)

These devices may have more potential in a socialist than in a capitalist country. In the former they make possible higher wages and productivity as well as more satisfactory work. In capitalist countries they may be marred by management insistence on intensifying the pace of work, or on "labor saving" aspects which result in layoffs of part of the work force. In the USSR, these changes are introduced in cooperation with the union; in capitalist countries they are often used to undermine the position of a union or to forestall its winning recognition.

VACATIONS

The union has special responsibility for Young Pioneer camps and for granting *putyovkas* for sanatoriums, rest homes and other vacation spots. The *putyovkas* assure a place at the designated resort with most of the cost covered by state social insurance funds. In Surgut power plant, in 1976, the Zavkom distributed 75 *putyovkas* for sanatoriums, and 60 for other vacation places. That was enough for about one-tenth of the total personnel.

From a number of conversations, I gather that *putyovkas* are usually granted to outstanding workers. And now, in the Soviet Union, there is a wide assortment of vacation facilities, tours, etc. available outside of the trade union-assigned sanatoriums and rest homes.

Vacation periods are centrally set, and for substantially more liberal periods than in capitalist countries. Since 1968 the minimum vacation for all workers and employees has been 15 working days.

As of 1975, 54 percent of all workers and employees enjoyed vacations of 21 working days, 24 working days, or even longer. The average duration was 21.2 working days, or just about a month for the great majority of workers on a 5-day workweek. (*Narodnoye Khozaistvo SSSR za 60 let*, p. 477.)

In the United States, as of 1974, the most common provisions for plant workers were one week after 1 year

of service, two weeks after 5 years, three weeks after 10 years, and 4 weeks after 20 years service. Office workers had slightly more liberal vacation benefits. To get longer vacations, one has to be employed by the same company for 10-20 years, which often is impossible, given the irregularity of employment in many U.S. industries. Also, large groups of workers in agriculture, services, and some non-union industrial plants get no vacations at all. (*Handbook of Labor Statistics*, 1977, p. 104.)

In the Far North and other areas of severe climate, vacation periods are extra long. Individuals I talked to all seemed to have vacations of more than a month. A woman operator at a gas pumping station in Surgut got 39 working days vacation. Allowing for weekends, that comes to more than 6 weeks. On a Black Sea hydrofoil, I met a worker from Magadan who was on a three months vacation trip with his wife. He had been all over the Soviet Union and confessed he was getting bored.

Two appendices of the Surgut power station agreement list over 100 occupations in which workers get 6 or 12 extra working days vacation because of abnormal working schedules or potentially harmful working conditions. The special lists, taken together, are so comprehensive that one wonders what workers are left out! The director and his deputies and assistants get 12 extra working days, as do the drivers and mechanics of the enterprise cars, welders, crane operators, and others. Specialists working in the factory's kindergarten get the most extra days vacation – 24.

HOUSING AND SERVICES

The fourth section of the Surgut document deals with a broad range of matters affecting living conditions of workers. The management is obliged to supply 8,050 square meters of useful housing space in 1976. At 12 square meters per person, this would provide for 700 persons. If we figure two workers and two dependents per family, that would provide for 175 families. At that rate, all power plant workers not yet having good housing would be provided for in a couple of years.

The administration and Zavkom, jointly, are obliged to distribute newly available housing space in accord with a priority list established according to the size of the family and its existing housing situation, with priority to veteran workers and those doing outstanding work.

The administration is obliged to equip a shop for the sale of sporting goods, to provide normal transport to work and back, as far as a specified bus station, and to transport students attending night courses.

The management is also obliged to provide parking space for workers' private cars. Long standard in the United States, this is a sign of increasing supplies of such consumers durables in the Soviet Union. Personal cars will become especially common in Northern Siberia, because workers who stay on the job three years have priority in purchasing cars and, of course, can more easily accumulate the necessary funds. In the northern climate, garages are essential in the winter, and the union is required to help construct them with materials supplied by the factory.

The administration has to provide round-the-clock buffet service so all workers can get food with minimal expenditure of time. People on watch duty, such as those supervising a control panel, are provided with hot meals at their working places.

The Zion, Illinois, nuclear plant has no food facilities whatsoever. Many workers, engineers and officials simply bring a sandwich and eat at their work place. Others have to check out and then in again through the security procedure to go home or to a restaurant for their lunch.

The Surgut Zavkom must supply, out of union funds, 18,000 rubles for mass cultural and physical culture activity. It provides picnics, excursions, fishing expeditions, mushroom gathering, berry picking, movie and other cultural excursions, assigning funds for transport when necessary. It is also responsible for Young Pioneer camps and for assigning places in them, with priority for children from large families.

Section 5 is devoted to the education and training of youth. Highly skilled workers and foremen are required to supervise the training of young workers through six-month or one-year courses. Labor law provides extra time off and vacations for young workers, and bars them from harmful or heavy work. Veteran workers are encouraged to take individual young workers "under their wing", and an appendix specifies modest additional compensation for veteran workers who do this. The administration and the

union, jointly, are to arrange for the entry of 30 young persons into technical schools and 45 persons into institutes.

The sixth section deals with improving the labor and living conditions of women workers. They receive special preventive medicines and examinations if they are engaged in dangerous or heavy work. They receive prophylactic examinations and benefits for pregnancy and child birth. The administration is required to provide a room where women workers may rest. Thirty additional places are to be provided at nurseries and kindergartens, and distributed by the Zavkom according to a priority list.

Obviously, this Surgut agreement comprehensively covers workers' lives on the job and has a major influence on their lives off the job. Does it regiment the workers? Does it set up a "big brother" union and administration bureaucracy looking over their shoulders? I do not think so.

Aside from those provisions which are necessary to define the businesslike operation of the enterprise and which detail sound working rules, everything in the agreement was stipulated by the workers and negotiated on their behalf by their elected trade union committee.

As for off-the-job activities, those also were at the request of the workers, collectively. Nobody forces an individual worker to go to a movie, or to a picnic sponsored by the union, or to send his kid to a Young Pioneer camp. But I imagine that in a frontier city like Surgut, these social activities are especially welcome to many people.

What about the waiting lists for housing? In theory, in a capitalist country, anyone can go to building supply stores, buy all the materials he can afford, buy a plot of land, and build his own house. Or he may contract with a builder to build it for him. *If* he can get a building permit. *If* he is not excluded by overt racist restrictions or bank redlining. True, also, materials and labor are not nearly so readily available in the Soviet Union. But in more settled parts of the country, Soviet workers can also get loans and secure supplies to build their own houses, or get them built. And, contrary to a widespread belief, a very large percentage of Soviet families own their own homes.

As for a place like Surgut, where almost all supplies still have to be brought in "from the outside" and where housing construction has to compete for labor and materials with top priority industrial construction, roadbuilding, etc., it's clearly to the advantage of the workers to have housing centrally administered and distributed according to objective criteria under the aegis of their own union.

In the United States, in areas of major construction projects outside of big cities, workers often have no option but to live in trailers. In Alaska, even that isn't practical for workers at the oilfields. They all live in temporary oil company-provided hostels. And in no case do U.S. workers' unions have a say in their members' housing, except for a few which independently set up housing cooperatives with their own funds.

On the whole, it seems to me that the issue of individual choice versus collective decisions has to be judged from a social, class viewpoint. For the capitalist, with plenty of money, control over workers and access to materials, there is real freedom to do what he wants, to build where and when he wants, to provide himself with suitable working conditions, to take vacations when and where he wants, etc. For the worker, such freedom is distinctly limited; and many of the arrangements for living, when placed on his shoulders, are extremely difficult to solve. Freedom to make his own housing arrangements becomes the noose of a mortgage around his neck, or of an inferior ill maintained rented flat located far from his workplace. The cooperative solution of these aspects of life, through arrangements decided collectively by the workers, is on the whole a great advantage that workers win under socialism.

Chapter X

SCIENCE

Among social scientists, Marx and Engels were outstanding for the importance they attached to the natural sciences and their role in the overall progress of mankind and in stimulating social advance. Lenin and the Soviet Communists followed in that tradition. From the very beginning, the Soviet government placed science in a key position in planning economic and social development, the first country to do so.

Shortly after the October Revolution, Lenin said: "From now on all the marvels of science and the gains of culture belong to the nation as a whole, and never again will man's brain and human genius be used for oppression and exploitation. Of this we are sure, so shall we not dedicate ourselves and work with abandon to fulfill this greatest of all historical tasks?" (V.I. Lenin, *Collected Works*, Vol. 26, pp. 481-2.)

The Academy of Sciences was enlisted to help the new government solve its economic problems. Lenin proposed that it concentrate on the rational distribution of industry, on achieving self-sufficiency in raw materials, on electrification, and on the use of water and wind power. Except for wind power, all of these factors proved extremely important in providing the basis for the success of the Soviet economy.

In the very first year of Soviet power, important new research institutes were set up. One, the Central Aerohydrodynamics Institute, headed by N.Y. Zhukovsky, not only did much to bring the Soviet Union up to the top ranks of military and civilian aircraft design, but also was the world pioneer in rocket engineering. It set the stage for the emergence of the Soviet Union, 40 years later, as the first country to send vehicles and men into outer space. In

another field of science, geological expeditions were also sent out from the very first to discover new sources of raw materials.

Scientists and engineers were paid very well and given special advantages in the poverty-stricken, hard-pressed country. The young Soviet government felt that these concessions were necessary in order to prevent a "brain drain" by the capitalist countries and to encourage the new generation of students to train as scientists.

The high regard for science and the consciousness of its central role in today's life are manifested today more than ever in the Soviet Union. It is a wholly positive consciousness – there is none of the "Frankenstein complex" afflicting so many in the West who view scientific research and its discoveries as evil demons threatening to destroy humankind.

On the other hand, Soviet officials and writers make a sharp distinction between the use of science for human progress and its use for aggressive military purposes. Such misuse of science is condemned, while its use for peaceful applications is hailed. There is none of the ambivalence – or opposition – to space exploration, living-cell modeling, and peaceful development of nuclear energy, for example, which is so widespread in the West. And in the USSR, too, the environmental movement is very large, but it functions mainly as a positive and active force to improve the environment, in conjunction with economic development – such as the vast tree-planting projects to form shelter belts – rather than as pressure groups to prevent or reverse economic development, which is the aim of many such groups in the West.

The great diversity of interest expressed in the many directions of Soviet science is indicated if we list some of the 34 projects which received State Prizes in science and technology in 1977:

– Investigation of light nuclear splitting by high-energy gamma-rays.

– X-ray radiation of the sun.

– Scientific principles for automatic designing and manufacture of electronic computer elements.

– New catalysts for petroleum refining.

– Engineering geology maps for more effective development of West Siberian resources.

– Regulating the liquid state and coagulation of blood.
– Deciphering the written records of the Maya people.
– Political economy of monopoly capital.
– Complex system for quality control.
– Large-scale complex for rice-growing in the Kuban Region.
– Cycle of works for the diagnosis and treatment of cardiovascular diseases.
– New effective scientific and engineering methods of developing the Samotlor oil deposit.

According to a Soviet press account, this last was worked out and put into practice in a short period of time. (*Sotsialisticheskaya Industria*, November 16, 1977.) This may well be what Fein was referring to in Tyumen when he told me of attempts to work out ways of further increasing production from the Samotlor deposits beyond 1980.

A new and potentially very important dimension in Soviet planning is the attempt to integrate science and economics in its long-term – 10-15 year and even longer – projections. Such advanced planning is becoming increasingly necessary if the USSR is to get maximum results from the scores of billions of rubles that are being invested yearly, including the sums committed to more and more vast complexes – such as the Non-Black Earth agricultural development – rather than to single enterprises.

To this end, natural scientists, engineers, mathematicians, computer programmers and economists join to evolve plans that take into consideration their forecasts of scientific and technological advances, new products and materials, that will become available in the given time span.

By 1976 there were 1,254,000 scientific workers in the USSR, double the number 12 years previously. Science expenditures reached 17.7 billion rubles, nearly triple those of 1964. In that same interval, 4,000 new types of machines were created and 3,000 new lines of industrial items were put into production, as well as 4.1 million inventions and rationalization proposals, resulting in a saving of 4.9 billion rubles. The amount spent for these inventions and improvements was 340 million rubles, mainly in payment to the inventors. (*SSSR v Tsifrakh*, 1976, pp. 83-85.)

INTERNATIONAL COOPERATION IN SCIENCE AND TECHNOLOGY

During the 1970s scientific and technical cooperation among the CMEA countries has developed on a tremendous scale, in accordance with the provisions of the Comprehensive Program for socialist economic integration described in Chapter XII. The high level and principled equality in this cooperation were highlighted by joint space flights of Soviet cosmonauts and those of several other socialist countries in 1978 – as yet, no astronauts from other capitalist countries have been admitted onto U.S.-sponsored space flights.

Joint researches of socialist specialists have led to more than 1,500 designs of new machines and instruments, and 1,200 new or improved production processes. Plans for the 1976-1980 period include 17 problems in power engineering, fuel industries, and other production fields, 150 scientific and technical tasks in protection of the environment and rational utilization of natural resources. (D. Gvishiani, in *Nauka i Zhizn*, No. 12, 1977.)

But statistics cannot convey the qualitatively new level of CMEA cooperation, over long periods, in crucial fields. The two most important areas of such cooperation are atomic energy and computers. The former is discussed in Chapter IV.

COMPUTERS

Only two major requests were not satisfied, of all we made in advance of our 1977 trip to the Soviet Union to obtain data for this book. One was to visit a computer factory and talk with specialists in the field. I am sure the omission was not because of secrecy, but rather a slip-up in the organization of my itinerary, or a lack of time, or the necessity to choose between alternatives.

Thus most of my information about this new and very important aspect of modern technology is not first hand – but because of its relevance to present, and particularly to future, economic development and planning, I feel that it must nonetheless be included.

In the area of atomic energy development, while the cooperation of other socialist countries is valuable, it seems clear that the USSR plays by far the decisive role. In the field of computers, however, the relative contribu-

tion of the other socialist countries is much greater. The CMEA set up an Intergovernmental Commission for Co-operation in Computer Technology in 1969.

This cooperation has progressed so far that one can speak of a single international socialist country computer industry, merging and, to some extent superseding, a series of national computer industries.

M. Rakovsky, chairman of the commission, writes: "The first step of the fraternal states was the pursuit of a single technical policy in the development of means of computer technology. Research and development work began to be coordinated. This not only yielded a great saving of time and resources but – most important – pooled efforts for the solution of major economic problems. Basically new forms of multilateral cooperation among the CMEA states were born." (*Pravda*, February 3, 1978.)

Among their accomplishments has been the creation of a unified system of third generation electronic computers. Commercial production of 11 models has been organized, together with all necessary peripherals, service centers, provision of spare parts, etc. Software has been worked out with 15 main type systems of automatic control for industrial plants and 111 packets of approved programs.

In 1974 the commission decided to organize a system of minicomputers for use in workshops, laboratories, stores, etc. Four models were developed, two were put into serial production by the end of 1977.

International specialization in production has cut costs, and automatic designing systems have reduced costs and saved time. Centers for training operators of third generation computers have been established with identical curricula, as well as manuals and handbooks prepared by international teams of authors.

As of early 1978 work was going forward on an updated agreement setting tasks and goals for the period up to 1990.

On the third generation computers alone, in the CMEA countries, there are 40,000 researchers and developers, 300,000 workers, and 400,000 mathematicians, engineers and technicians.

Stefan Kossev, the Bulgarian deputy trade representative in New York, told me proudly that his country leads in computer production, among the CMEA countries outside the

Soviet Union. And this fits in with Bulgaria's labor resources. A few years ago, I saw electronics factories in rural areas of Bulgaria. As part of the system of large agrarian-industrial complexes into which the countryside has been divided, factories have been erected to produce a variety of products. Electronic plants, requiring many production workers, do not consume large quantities of heavy raw materials or energy, and they provide an alternative for young people who do not want to work on the farms or are not needed for the highly mechanized agriculture.

Kossev said that Bulgarian enterprises and establishments are now well supplied with computers – the problem is to make full use of them. USSR economists say that their supply is adequate – Soviet establishments that really need computers have them.

There is nothing comparable to the CMEA cooperation in computers in scientific-technical cooperation among capitalist countries. Cooperation does exist, but more between individual companies and research institutions, rather than on all-national levels. Cooperation is limited by commercial rivalries, and its goal of maximizing the profits of the participants may not coincide with the most effective advancement of science and production. In the past decade some giant multinational corporations, such as IBM, have internationalized part of their research and development work. But the core of it remains in the home country, and the interests of the owners located in that country remain paramount.

It is claimed that the competition among scientists, technicians and inventors in the United States yields fast and often spectacular progress, notably in computers and electronics. Nobody can deny this. Yet, in the long run, the planned international cooperation of the socialist countries in all of these areas has great advantages. Nor need the participants in this work lack adequate moral and material incentives.

The first U.S. computer was built in 1943 the first Soviet computer 8 years later. The lag was due primarily to wartime destruction in the Soviet Union, and the priority requirements for reconstruction of cities and basic industries. This may have been compounded by an underestimation of the potentialities of electronics and computers.

To this day there remains a substantial lag behind the United States in the quantity of commercial computers produced, and in their maximum operating speeds, memory capacity, etc. But the lag may be considerably less in the effective use of computers. A U.S. computer specialist once quipped: "U.S. machines are ten times more powerful than Soviet machines, but the Soviets are ten times more effective in using the computer capacity they have."

This seems to be particularly true in the application by socialist countries of computers to industrial production. By 1976 the GDR was at least on a par with the United States in computer-aided manufacturing systems, and American manufacturers were calling for government assistance to keep up with socialist countries and some capitalist countries in this regard. (*AMM/MW News*, January 26, 1976.)

With the unified computer systems and minicomputer systems now in mass production, and rapid technological progress continuing, the socialist countries are largely self-sufficient in computers. Rakovsky writes that mass production of computers had enabled them to "practically stop importing similar devices from capitalist countries". (*Pravda*, February 3, 1978.)

It's easy enough to understand why the socialist countries *want* to be independent of capitalist countries in computers. For a long time the United States refused to sell any computers to socialist countries. Then, when some NATO countries, notably Britain, defied U.S. wishes and sold computers to CMEA countries, Washington permitted some sales, but tried to limit them to obsolete models. Recently, under pressure of West European, Japanese, and some U.S. companies, COCOM rules were liberalized, but not enough to permit the sale of computer systems *decisively* superior to those the socialist countries produce themselves.

To this day, the U.S. Government is especially restrictive and capricious with respect to the sale of computers and components to socialist countries. The Pentagon rationalizes that the computers might be used for military purposes. This is absurd. A computer system is a complex set of components designed and coordinated for a specific use, and could not be effectively diverted to a necessarily unrelated military function.

Furthermore, the lag in the Soviet computer industry

is in its capacity to mass produce high capacity computers economically for civilian industry. It is not at all certain that there is such a lag in Soviet production of special purpose super-computer systems for scientific and military purposes, where cost is a relatively secondary consideration. Remember that the Soviet Union was the *first* country to send up space vehicles and the pioneer in intercontinental ballistic missiles. Obviously highly sophisticated, high capacity and high speed computers were required for these feats.

In the summer of 1978 President Carter cancelled shipment of a contracted computer to the Soviet Union for use in expediting reporting of the 1980 Olympics. Simultaneously, the government pressured a number of scientists to cancel visits to the Soviet Union as part of a long-term program of cooperation. All this was justified as a "defense of human rights".

Polemizing against these actions in *Science* magazine, Nicholas Wade debunked the idea that the U.S. can harm the USSR by refusing to sell that country computers, on the ground that such sales would "help the Soviets catch up in an area where they are perceived to be far behind".

Continuing, Wade wrote:

"Five years ago, American analysts reckoned that the Soviet Union lagged 5 to 10 years behind the United States in computer technology, while the Russians suggested the lag was 2 to 3 years. The gap is now so much smaller that some experts find it hard to quantify. The ES 10-40, a Russian Ryad series computer built in East Germany, 'is about the equivalent of last year's IBM', says one computer industry expert... According to the same expert the Russians can build what they have to: 'If they really need it, they can do it'". (*Science*, August 4, 1978.)

SCIENTIFIC-TECHNICAL COOPERATION WITH CAPITALIST COUNTRIES

The Soviet Union, in its rapidly expanding scientific and technical cooperation with capitalist countries, is extending some of the planned, long-term character to these connections that exists in the relations among socialist countries.

Franco-Soviet cooperation is most advanced, reflecting

the fact that positive relationships were started with France in advance of other capitalist countries. Mixed groups of Soviet and West German experts have agreed on more than 20 projects in various industries.

An especially promising start was made with similar U.S.-Soviet agreements during the detente period of 1972--74. Over 60 agreements on scientific and technological cooperation were made with leading United States corporations. Gvishiani* writes that in addition to Congressional trade restrictions, the Carter administration "took a number of drastic measures to limit the scope and themes of joint research to be carried out in pursuit of agreed programs under the Soviet-American intergovernmental agreements".

Nevertheless, he goes on, successful progress has been made in several fields, such as electrometallurgy, chemical catalysis, metrology, automated control systems, molecular biology, use of computers for administration of big cities, economic modelling, and railway transport. Significant progress is being made, through U.S.-Soviet cooperation, in development of magneto-hydrodynamic (MHD) electric power stations.

He mentions cooperation with General Electric, Dresser Industries, and Hewlett Packard Co. in specified areas. I think that the pall thrown on detente by U.S. official policy seriously interferes with the practical development of these agreements, which are signed on a general basis but need specific arrangements and contracts to be effective.

Aside from the fields mentioned by Gvishiani, there has been major Soviet-U.S. cooperation in the very advanced fields of thermonuclear power and space exploration, the latter highlighted by the Soyuz-Apollo flight. But further collaboration in these areas, also, is threatened by the retreat from the detente policy by the U.S. Government.

SCIENCE IN LATVIA

Most of the Soviet scientific establishments are organized administratively within the Academy of Sciences of the USSR. In addition, each of the 14 union republics other than the Russian Federation has its own Academy of Sciences.

* Deputy Chairman of the State Committee of the Council of Ministers of the USSR for Science and Technology. *Ed.*

In Riga we visited the Latvian Academy of Sciences and were given an outline of its functioning and history. In 1939 there were only 1,000 scientists in Latvia, mainly university professors. The Latvian Academy of Sciences was organized in 1946. It consists of 12 institutes, covering technical, chemical and biological, and social sciences, with 7,000 people working in them.

In all fields now there is an emphasis on improving the links between "pure" and applied science. The Economics Institute is working on organizing a system of agro-industrial complexes, one for each of the 26 raions (analogous to a U.S. county in size) of Latvia. The idea is to unite in one organizational and planning complex all of the agriculture, suppliers of goods and services to agriculture, and industries processing farm products. It was set up in one raion in 1976 and will be tried in several others. After a full test extending over several years, if successful, it will be applied throughout the Latvian Republic. The system, as described to me, appears to be similar to that in effect in Bulgaria.

Later we visited the Institute of Organic Synthesis, in a suburb of Riga. Directed by Professor Gunnar Cipens, this is one of the most prestigious institutes in the USSR, both for its accomplishments and for the way its work is organized. It is well known abroad, and has important business dealings with foreign, including U.S., companies.

The Institute was founded by the late Academician Solomon Hiller, a State Prize winner, who was an innovative chemist. He is given recognition for his organization of the Institute and for directing the preparation of some of its most important new products.

Its primary focus is development and production of pharmaceuticals, with a secondary interest in agricultural chemicals. It epitomizes what has become a general objective of Soviet research: a close linkage with product development and mass production.

There are two experimental plants associated with the Institute, and "in close contact with these institutions, a combined scientific and industrial center started growing in Olaine, in the vicinity of Riga (a factory of chemical reagents, a chemical and pharmaceutical factory, and a Latvian branch of the institute 'IREA').

"At the very beginning the aim was set to build up a

scientific community of a new type. Successful search for new physiologically active compounds can be achieved only in the Institute is of a complex structure, combining the work of synthetic chemists with that of microbiologists, pharmacologists and medical clinicians, capable of screening and clinical testing of the synthesized compounds. The Institute required also an industrial basis of its own – an experimental plant for manufacturing new preparations in quantities necessary for clinical and field testing and for accumulating technological know-how.

"This is just the structure the Institute managed to build up. It started in 1957 with a staff of 37, without a building of its own, without adequate premises for laboratories, without equipment. It has grown in the course of 18 years into a body of 560 scientific workers (comprising some 100 candidates of science and 12 doctors of science), with two experimental plants manned by 700 workers, with a basic laboratory building and a building for drug research, and, last, but by no means least, with a solid scientific reputation and wide scientific contacts both in the USSR and abroad." (*Academy of Sciences of the Latvian SSR: Institute of Organic Synthesis, 1957-1976,* Riga, Zinatne Publishing House, 1976, p. 9.)

During the years 1970-1975, the Institute published 42 monographs and more than 1,300 articles in scientific periodicals, 110 author's certificates were granted and 41 patents. It has organized and held a number of international conferences and symposiums. It edits and publishes an all-Union scientific journal *Chemistry of Heterocyclic Compounds*, which is published in English in the United States.

I was impressed by the relative youth, broadmindedness, and activity of the top people of the Institute. The Director, Professor G. Cipens, a corresponding member of the Academy of Sciences of Latvia, is also head of one of the 18 laboratories and divisions of the Institute, the laboratory of peptides. He took over as director in 1975, when Dr. Hiller died. He appears to be not more than 40 years old.

Professor Cipens described the way in which the experimental plants and research laboratories coordinate their activities.

To develop a drug, it is necessary to investigate many thousands of chemical compounds of a given family. The

laboratories of biorganic chemistry and molecular biology sift these down and synthesize 20-30 compounds of the group. The laboratories of biological testing and pharmacology will study these and, at the end of the chain, there will be perhaps one compound left for clinical testing.

The experimental factories are then charged with making up enough for testing throughout the USSR – perhaps 100 grams of the drug. At this stage, cost of production is not a consideration. After a year or a year and a half of testing, the results go to the board for approval for mass use. The board is the equivalent of our Food and Drug Administration. If approved, the experimental plants have to work out a technology that will be economical for mass production. They also popularize new drugs, but the sum allotted by the government for publicity is "'very small" - evidently in no way comparable with the enormous advertising campaigns of the U.S. drug concerns.

In 20 years, the Institute had discovered 12 new drugs and 50 new ways of preparing existing drugs. If a drug is very valuable medically, the price to users is kept low by government subsidy, especially during the initial period until the Institute and its plants work out technological processes that will reduce costs.

I was amazed at the small size of the Institute's operating budget – only 2.2 million rubles (not including the experimental factories). Professor Cipens estimates that 55 million rubles of products are produced in the USSR each year on the basis of the work of his Institute. And of this, 10 million rubles' worth goes for export.

A number of the drugs developed and patented by the Institute have been licensed to foreign companies. Dr. Cipens told us that the Institute uses the royalties received from foreign sales and licenses to buy the most advanced foreign equipment. U.S. equipment is bought through European countries, such as Switzerland. That adds 20-30 percent to the cost, but they can't buy directly from the United States. I didn't get clear whether that was due to licensing difficulties, financing problems, or a combination of the two.

"U.S. equipment is better computerized than ours," Dr. Cipens said.

In addition to computerized equipment, the Institute has purchased a third generation Hewlett Packard minicomputer and Data General equipment. The Institute of Organic

Synthesis uses the large computers – perhaps the ICI equipment Dr. Cipens mentioned to us – of the Institute of Electronics and Computers, and it also has an automatic differentiometer from Syntex as well as equipment from Perkin Elmer and from Princeton Laboratories.

Cipens did not expect the superiority of U.S. computers to last long. He is confident that the cooperation among CMEA countries in developing and producing electronic equipment will result in computers equal to those of the United States. And, he concluded, they will also be compatible with Western types for add-ons or joint use.

The most significant and best known drug developed by the Institute is Ftorafur, a complex anti-tumor preparation. The point is that the tumor-killing agent, 5-fluorouracil, is held within the compound for a considerable period of time, circulating in the blood and continuing to reduce tumors, precluding harmful side effects, instead of being released directly to result in limited effectiveness and causing harmful side effects.

Between 1968 and 1974 it was tested on 341 patients by a standardized method of measuring objective results. Definite positive effects were found in 49 percent of the cases, including 66 percent of the cases of mammary gland cancer, and substantial percentages of improvement in rectal cancer, gastric cancer and – with a yet small sample – in brain tumors.

In the case of mammary gland cancer, Ftorafur was compared with a number of other widely used drugs and found to be superior to all of them.

In 1973 the Institute sponsored a Soviet-American-Japanese symposium on Ftorafur. An exclusive license for the drug has been sold to the Bristol-Myers Company of the United States and large amounts of Ftorafur are sold in Japan. James M. Tuholski, M.D., executive vice-president of Bristol Myers, wrote to me in May 1978:

"Clinical studies are now in progress to determine the utility of this agent [i.e., Ftorafur – *V.P.*]. At this time, it is premature to assess the results of the tests and the ultimate prospects of the drug.

"Ftorafur has enjoyed considerable market success in Japan...."

Since the main purpose of the Institute's experimental factories is to work out economically feasible methods of

manufacturing drugs, the license sold to Bristol-Myers is not for the formula of Ftorafur, which is known, but for the process for making it.

Another specialized anti-cancer drug, L-Asparaginase, has also been developed, as well as a variety of drugs for other purposes. At the time of our visit, Dr. Cipens said that the Institute was expecting a visit the following week from the president and a vice-president of the Upjohn Corporation (U.S.). Such contacts with Western firms are quite frequent.

Agricultural chemicals are the second area of concentration of the Institute. It has developed Diludin, a growth stimulant for livestock without harmful effects. It has been approved by the appropriate body of the Ministry of Agriculture for use in grass-meal. Behind the preparation of specific pharmaceutical and agricultural chemicals is the bulk of the Institute's work in more basic research. Thus, Professor J. Stradins, a member of the Academy of Sciences of Latvia, described the work of his laboratory of physical organic chemistry. It examines the electronic and spatial structure, intermolecular interactions, and other properties of the classes of organic compounds that are synthesized and studied at the Institute. Stradins' specialty is electrochemistry – utilizing the changes in compounds when certain specialized electrical treatment is applied.

According to Dr. Stradins, the Institute and its experimental and development factories are third in the USSR and sixteenth in the world in the synthesis of new drugs. Just how that is measured, is hard to say. But the claim, I take it, represents in some measure the importance of this Institute in particular, and the USSR in general, in the pursuit of science to advance human health.

AKADEMGORODOK

In our one-day visit to Akademgorodok, the suburb of Novosibirsk housing the main portions of the Siberian Branch of the Academy of Sciences of the USSR, we could get only a broad view of the physical appearance and scope of activity of this great and growing complex.

The Siberian Branch has 35,000 scientific workers, of whom 23,000 are in the 24 institutes in Novosibirsk. The remainder are spread among the 10 institutes in Irkutsk,

the 8 in Yakutsk, and the rest are in other cities. The Branch has trained 3,000 candidates of science, 400 doctors of science and 75 members and corresponding members of the Academy of Sciences of the USSR.

The Branch was set up in 1957. At that time, Dr. Kutetaladze, director of the Institute of Thermal Physics, told me, few people thought it possible to establish a major research center in Siberia. But apparently the doubters underestimated the special pull of Siberia on people imbued with the questing, exploring spirit of true scientists. Moreover, the government supported the Siberian Branch not only in words; it also supplied substantial financing and material resources.

Architecturally and structurally, the working buildings and the residential centers for the staff are first-rate. The Novosibirsk Sea, created by damming the Ob River, provides the people with facilities for aquatic sports. There is ready access to downtown Novosibirsk, with its big-city shops, cultural centers, etc.

Having started from scratch 12 years after World War II, the Siberian Branch had the advantages of a project planned and constructed as a coordinated whole, supplied with the physical and organizational requirements essential for effective present-day scientific work. The fact that most of the institutes are located in one area – as on a huge college campus – facilitates connections among them and fosters cooperative approaches to problems cutting across the concerns of two or more institutes.

A decisive source of vitality is the prime role of Siberia in the economic development of the USSR, and the major contribution the Branch is called on to make to that development.

The research institutes are also closely connected with Novosibirsk University, the largest in Siberia, and the presence of many of the USSR's top scientists as professors there makes the school an outstanding center for developing scientific cadre.

The scientists we met in conference and at lunch gave us much background information. For example, the 25 million people of Siberia and the Far East occupy 56 percent of the territory of the Soviet Union. The Far Eastern area (population about 7 million) has its own Branch of the Academy of Sciences, independent of the

Siberian Branch, but, of course, there is much overlapping.

Because of its excellent facilities and top-ranking personnel, foreign scientists consider Akademgorodok a favorite place to visit. While we were there an international conference on computer software was being held.

We visited the Institute of Economics which, with its 500 people, is the largest Soviet scientific-economic institute east of Moscow. Unfortunately, Academician Aganbegyan, the head of the Institute, was delayed in Moscow so that I could not meet with him, but I did meet with other leading economists. A main focus of the Institute is to work out methods for improving the system of economic planning. For this purpose it makes extensive use of mathematical models, applying them to systems of planning the national economy and the economies of the main regions of the country. The Institute sends its results to Gosplan (the State Planning Committee), to the Union republics' planning centers and to regional officials.

The Institute is also engaged in long-term forecasting of the Soviet economy. The same models for forecasting have been used for the last ten years, with considerable success, and on the basis of this work, proposals have been formulated for the 5-year plans and for long-term development plans. The Institute claims that Gosplan makes considerable use of these forecasts because of their high degree of accuracy.

I asked about the problem of planning investments so as to avoid overcommitment to too many projects, with resulting delays in completions. Professor Konstantin Valtukh, head of the department that plans the tempo and degree of industrial development, told me briefly of his work in this field. The object is to determine, mainly for Siberia, an optimum complex of large-scale investment projects for maximum effectiveness. Recently a new department has been set up to deal with optimizing territorial planning, with special reference to investment and construction. Boris Orlov is its head.

Yuri Chizov specializes in the study of the U.S. economy, continuing the work started at the Novosibirsk University by Professor Stanislav Menshikov who, at this writing, is employed by the United Nations in New York. According to Chizov, their group has developed forecasting models for the U.S. economy, using 50 equations, that are better than or equal to the best U.S. mathematical economic

forecasting results. They, he claimed, predicted the 1969 and 1973-4 U.S. recessions well in advance.

Of course, he added, the equations are not applied mechanically. The mathematical models are instruments of forecasting which, with other aspects of analysis and judgment, are added up to reach a final conclusion. The formulas account for, perhaps, 30-50 percent of the forecast.

I personally have some experience with this kind of work and remain skeptical of the effectiveness of multi-equation formulas for predicting the course of the capitalist economy. The coefficients are calculated from past experience. No matter how well this is done, random fluctuations, changes in the underlying economic relationships, and the impact of "unexpected" political events, are likely, in combination, to bring about a margin of error sufficient to destroy the usefulness of such formal calculations.

If, as is the case both in the United States and the Soviet Union, the formulas are used as one instrument in helping to come to a conclusion concerning the course of the capitalist economy, based also on simpler calculations and qualitative considerations, one wonders whether the substantial mathematical work and computer time spent in developing and applying the equations does more than add an aura of scientific exactitude to a forecast which, by the very nature of capitalist economy, must have a large degree of uncertainty surrounding it.

Tatiana Zaslavskaya, head of the department of sociology of the Institute of Economics and a corresponding member of the Academy of Sciences of the USSR, spoke about the problems of working women in the USSR. There are more Soviet women than men in institutions of higher education, she said, but the economy does not get the full advantage of that, nor do the women. On the average, they have less than half the free time of men, because they have the burden of housework and the care of children. This has negative results both on the job and in the home. With this handicap, promotion of many women to high positions is restricted.

One solution is to give longer periods of paid maternity leave after childbirth – perhaps for one or two full years. This is far more liberal than maternity benefits in the United States.

We didn't get into the subject of an approach through more even distribution of housework, shopping, child care

etc. which is ignored or approached only obliquely in most Soviet writing on the problem. The main line is to stress mechanization of household work, commercialization of services, establishment of more nurseries, etc., to reduce the time required for these activities by working women, rather than shifting part of the burden to men. Among the younger generation of married couples, however, there is substantial improvement over the traditional derogation of such "women's work" and considerable sharing of chores.

At Akademgorodok there is an excellently arranged Museum of the Minerals of Siberia. It gives one a feeling of the inexhaustible scope of the natural resources of that vast land. It forces one to consider, as well, the inexhaustible labor required of scientists to oversee their discoveries, to plan their most effective utilization, and to make long-term projections of the course of development for all the interconnected aspects of life in Siberia and, in relation to it, in the USSR as a whole.

The director of the Museum, S. Nikolaev, gave me a copy of a remarkably comprehensive small book he authored on the *Mineral Wealth of Western Siberia and Its Utilization*. The price of this 137 page book... 22 kopecks!

My extremely interesting meeting with the people of the Agricultural Institute at Akademgorodok is discussed in Chapter V.

THE ENVIRONMENT

Throughout human history man has had to deal with his environment, with gradual evolutionary developments and, sometimes, with drastic changes – for example, the ice age and the emergence and disappearance of islands, cataclysmic faults as a result of earthquakes, followed by tidal waves that deluged all lands exposed to the seas. Man has had to struggle to cope with and "conquer" nature – that is, to learn how to obtain a more adequate fulfillment of his needs. With few exceptions, however, the activities of man had, until recent years, little impact on his physical surroundings.

But with the industrial revolution, especially in this century with its tremendous expansion of economic activity, man's counter-influence on nature has become increasingly significant. The exhaustion of various natural resources can

be foreseen. Production processes, if not controlled, can exhaust the forests, the fresh water in the ground, the fish in the sea. The waste products of manufacture and consumption can poison water and atmosphere. The enormous increase in the combustion of fossil fuels leads to smog and other atmospheric pollution that can have a "greenhouse effect", markedly changing the climate of the earth. Through wars man has already adversely affected the environment, as by testing nuclear weapons in the atmosphere and by ruining much of Vietnam's farmland by U.S. chemical warfare and the most intense bombardment in history. And all this pales before the possibility of thermonuclear war, which could make large parts – or even all – of the earth uninhabitable.

Under capitalism the growing impact of man on nature has, until recently, been uncontrolled, anarchistic and almost always harmful. The object of capitalist progress has been profit, and nature pays no money for its protection. Capitalist ideologists, therefore, have had a negative, doomsday, approach to these problems.

In a relatively early period of industrial capitalism, this approach appeared prominantly in the population theories of Thomas Malthus, who wrote of the need for epidemics, wars, and other calamities to reduce the population which, he thought, must otherwise surpass the ability of the earth to feed it. The Malthus approach is very much alive today, for example in the Zero Population Growth movement. But today what we might call the neo-Malthusian approach extends beyond the suppression of population. It considers that the consumption of energy, and the scale of production and consumption in general, have become excessive, and are doing irremediable harm to the environment and rapidly exhausting natural resources.

Neo-Malthusians call for stopping or reversing the growth of industry, for reducing the standard of living, for disdaining new, high-powered energy sources – notably nuclear energy – and for returning to decentralized, simpler forms of energy use and economic organization. Various aspects of these views are expressed in the writings of Meadows, Marcuse, Commoner and Lovins. Organizationally and politically, these ideas are reflected in the programs and activities of most of the environmentalist groups in the United States and some other capitalist countries.

Social and economic policy recommendations of high-level commissions, national and international, often go in the same direction.

In his time, Marx polemized against Malthus, and today's scientific Marxists disagree sharply with the pessimistic approach of the neo-Malthusians. Marxists consider that the problem lies not in technology, but in the seeming inability and unwillingness of capitalists to use it with the necessary regard for human welfare, health and safety. Soviet ideologists believe that man can and must combine continued growth with control over his interaction with nature, *so that man improves the natural environment for human existence, rather than damaging it.*

And in the past two decades, guided by intensive study, the Soviet Government has allotted increasing resources to projects directed towards achieving that goal. With significant results. Among the well known accomplishments: the complex of regulations for preserving and even improving the purity of Lake Baikal; cleaning up much of the Volga; a 90 percent reduction of air pollution over Moscow; systematic building of green belts around residential areas of cities; planting of shelter belts in relatively dry farming areas; saving of a number of nearly extinct species of animals.

I met with Yuri Izrael, Chairman of the State Committee for Hydrometeorology and Control of Natural Environment, a Doctor of Physics and Mathematics and a corresponding member of the USSR Academy of Sciences. He is also vice-president of the World Meteorological Organization and Soviet Co-Chairman of the U.S.-Soviet committee established to carry out the joint agreement of the countries in the field of the environment.

Izrael's committee includes the Soviet weather service, and is also the main body with responsibilities for the environment. It has 100,000 employees.

Dr. Izrael told us that the Hydrometeorological Service monitors conditions in the biosphere (the section of the atmosphere, earth, water and sub-surface used by man) and sends reports to all concerned ministries. Thus questions of water purity are of interest to the Ministries of Public Health and of Fisheries. Criteria have been established for judging what levels of pollution constitute a threat to the biosphere.

What is the danger? And what is the cure? These are

questions for the local Soviets, for the republics or the all-Union government, depending on the seriousness and extent of the problem. Forecasts of future environmental developments have to be made and the necessary control and remedial measures included in the five-year plans. The relevant ministries and enterprises have to make the technical decisions as to what is required in the way of filters, changes in technology, etc., in order to achieve effective environmental protection.

I asked about comparative expenditures for environmental purposes in the United States and the USSR. Dr. Izrael replied that while cost differentials and statistical coverage make comparison difficult, it is probable that the United States spends more money directly for environmental purposes, because the United States has more pollution. But he thinks, the expenditure per unit of pollution and the technical levels of environmental protective work are about equal.

Overall, the environment is improving in the Soviet Union. There was much damage done during World War II. Plants were evacuated to the Volga area and, in the desperate conditions of emergency wartime output, there was not time, resources, or provision for control of pollution. The Volga River became heavily polluted, but later a special act was passed governing the cleaning up of the river, and the situation started to improve. The same factors, I learned elsewhere, applied in other situations; including Lake Baikal.

Costs of purification equipment for enterprises on Lake Baikal, and on rivers flowing into it, Izrael said, amount to 20 percent of the cost of production, substantially above pollution control costs of most enterprises.

I asked about strip mining, and Izrael explained that any enterprise that strip mines has to restore the land. The financial loss in this case is not significant, amounting on the average to an addition of only about 5 percent to the cost of production. The ministry controlling the mine is responsible for seeing to it that the land is reclaimed.

For metallurgical plants pollution control measures add 5 to 7 percent to total capital investment costs. The most general range for industrial plants is from 2 to 5 percent of the cost, moderately below corresponding reported percentages for the United States, although the difference

may be due to definition and to relative prices of pollution control installations.

In general, I think, it is easier to get compliance with these required "non-productive" expenditures under conditions of socialism, where the state provides the bulk of the capital funds, than under conditions where private corporations have to raise the additional capital. However, even in the United States, devices such as tax-exempt pollution control bonds are used to encourage compliance.

During the past decade in the Soviet Union, a whole series of special laws have been passed providing detailed requirements for environmental improvement and preservation of water, land, mineral and forest resources. Special regional laws have been passed for the Volga and its basin, for Baikal and its watershed, and for the Urals.

I asked about prospects for completely closed industrial systems, which would recycle and reuse all waste materials. Dr. Izrael said that technology for that has not yet been developed; it can't be done now even with exorbitant expenditures of money. It will be 20-30 years, he thinks, before completely closed systems are feasible, and even then that will involve a complete reconstruction of industry on new bases. Meanwhile much further progress can be made in reducing pollution, so as to bring about an overall steady improvement in the environment.

What about the long-discussed project for reversing the flow of Siberian rivers to provide water for the semidesert, but potentially very fertile, Central Asian and Transvolga areas of the USSR?

Economically and technically it can be done, he said, but it is necessary first to conduct further investigations of the climatic changes that might result. If the turnaround involves only 2 to 5 percent of the volume of water in the rivers, there probably would not be a significant effect on the climate. But for a larger turnaround, he explained, very careful investigation is essential to evaluate the effects, so as to be quite certain, lest there be drastic harmful climatic changes.

I asked Dr. Izrael his view on the movement in the West against nuclear energy, the main focus of environmental activism in the United States. He dismissed it as a psychological phenomenon. He considers nuclear power desirable because it is the cleanest of all sources of ener-

gy, with 3,000 to 4,000 times less pollution than fossil fuels. The possibility of casualties from a catastrophic accident is also many times less than from earlier sources of energy, in his view.

Dr. Izrael believes that technical and economic advantages can be gained from the use of nuclear explosions for peaceful purposes. The Soviet Union has used them for a variety of purposes, including opening up mineral deposits and blasting for canals. It was planned to use nuclear blasts for such major projects as that of opening new beds for reversing the flow of rivers.

However, the U.S. Government, after several experiments (the "Gas Buggy" program), decided against it for the United States. So U.S. officials started a propaganda campaign against the Soviet Union's peaceful explosions and demanded that they be prohibited along with military explosions. As a concession, in an as yet unratified agreement limiting the size of underground military nuclear explosions, the Soviet Union agreed to sevcre limitations on peaceful explosions also.

Later, in negotiations for a complete ban on all military explosions, the USSR changed its position and agreed to a simultaneous *moratorium* on peaceful explosions. Evidently they hope to persuade the United States to relent later in its opposition. Since the USSR offered on-the-spot inspection of peaceful explosions, the ostensible reason for opposition, that these explosions would really mask military purposes, was dishonest. The clear motive of Washington is to force the USSR to accept an economic sacrifice as a price for a disarmament agreement.

Recently I asked Soviet Embassy officials in Washington why their government accepted these terms. They replied that a nuclear weapons test ban would largely stop the qualitative arms race and increase the prospects of peace. Their country's gain from this would be very great, easily outweighing possible economic losses from the moratorium.

I asked Dr. Izrael about the environmental movement in the USSR. There are 10 million members of the Friends of Nature Society, an organization comprised of volunteers who help police the environment. They conduct propaganda. From the first school years children are taught not to destroy their forests, rivers, and other natural features. The forests and rivers, the land generally, is open to the people,

not fenced in as in capitalist countries. This, by the way, we noticed ourselves during a Sunday ramble through fields, pastures, and householders' backyards not far from Moscow.

Soviet environmentalists have an extensive body of laws, public opinion, and official propaganda behind them. Penalties for polluting rivers, killing fish, etc., are very severe. In the United States fines are routine and impersonal, paid out of swollen corporate treasuries. In the USSR they are imposed personally on the guilty plant managers; and in severe cases, the responsible individuals are imprisoned. There is no way of lobbying against environmental protection or workers' safety measures, or of using legislatures to prevent appropriation of funds needed for inspectors.

However, Dr. Izrael pointed out, the Friends of Nature cannot go into questions of plant technology, which is a professional question. This is quite different from the situation in the United States, where many environmentalists, journalists, and other non-technical people consider themselves qualified to hand down the final word on the most complex engineering-economic questions; and where anybody who can take the time is permitted to intervene in hearings on environmental questions.

I can see merits in both approaches, as well as drawbacks. Often, in the United States at any rate, "whistle-blowing" by non-specialists forces a response from sluggish bureaucracies, buttressed by complacent technicians. On the other hand, tremendous publicity and even authority is given in the United States to persons without specialized training, such as Amory Lovins Jr., the environmentalist, and Robert Redford, the movie actor, who have made technically absurd claims in their advocacy of "solar energy now".

Certainly technical people, as well as many without technical expertise, do debate environmental questions in the USSR, in actuality. In 1965 I visited the Limnological Institute on Lake Baikal. The Director A. Galazy was a real enthusiast for his beautiful lake, which contains 20 percent of the world's fresh water. At that time, he probably knew more about the lake than any other individual.

Galazy was concerned about the likely pollution of the lake from a pulp plant being erected on its shores. He started a campaign, and the scientists of the Siberian Branch of the Academy of Sciences, who had studied and approved the proposed plant, reconsidered their position.

They admitted they had been too hasty. The debate got onto the floor of the Supreme Soviet of the USSR, with prominent members, such as tbe writer Sholokhov, demanding that measures be taken to save Baikal.

The result of the debate, and subsequent investigations, went far beyond the issue of the pulp plant. It was found that Baikal was being polluted, not from the pulp plant, but from tbe floating of logs on the many rivers flowing into the lake and from pollution of the Selenga River. The Selenga's pollution was caused by chemical plants at Ulan Ude, capital of the Buryat Autonomous Republic, several hundred kilometers upstream from the lake.

The problem of the pulp plant was solved. Excellent water purification installations were required before the plant was permitted to produce. A special decision covering all aspects of the use and protection of Lake Baikal and its watershed was passed. United Press International correspondent Douglas Stanglin wrote:

"With the coming of the new Baikal-Amur railroad, Lake Baikal ... suddenly finds itself in the middle of a booming industrial region...

"Baikal ... the 'Pearl of Siberia'–is a remarkable work of nature. More tban 1,200 species of life are found in the lake, and its waters are so clear an object can be seen 120 feet below the surface."

Industrial development, he continued, "has spawned intense conservation efforts".

"The planned cellulose and paper mills built on the lake in the late 1960s were redesigned to include improved water purification equipment. ...Since 1971, more than $191 million have been spent to clean up the lake... Cities surrounding the lake no longer dump raw sewage into its waters... Government orders now prohibit the floating of timber in the lake or its tributaries... Mongolia has agreed to clean up waste water dumped into rivers which feed tbe lake....

"...One of the best signs that the lake has cleaned up serious pollution was tbe lifting of a ban in 1976 on fishing for omul, a salmon-like whitefish indigenous to the lake."

Hundreds of thousands of tourists, he wrote, now visit Baikal:

"But regional officials say there will be a sharp curb on tourism, limiting facilities mainly to campgrounds... All hunting and fishing programs must first be cleared by environmental research groups." (*Daily World*, May 4, 1978.)

Soviet specialists emphasize the global character of environmental problems. The atmosphere and the oceans know no national boundaries; hence solutions must be international. Fedorov, after claiming that socialism has better conditions for dealing with environmental questions than capitalism, wrote:

"Evidently urgent measures for regulating the interaction of man with nature cannot be postponed until the victory of socialism in the wbole world. With every passing decade, the need increases to undertake the inevitable task of effectively using natural resources, of closely regulating their influence on the environment.... However, in tbe near future it will be necessary to take prompt international measures to shift from spontaneous development to planned activity in relation to the environment of our entire planet. And this, undoubtedly, can be accomplished if there is peaceful coexistence of states with different social systems. The critical need for such measures is a potent argument in favor of peaceful coexistence and cooperation.

"An end to the arms race and implementation of serious measures for disarmament will free huge sums whicb may then be invested to reconstruct industry so as to stop pollution and improve natural resources. Under these conditions, it may be possible to project common aims and define perspectives for the development of human society as a whole." (E. K. Fedorov, *Vzaimodeistvie Obshchestva i Prirody*, Leningrad, 1972, Gidrometeoizdat, pp. 85-86.)

Chapter XI

PROBLEMS OF THE SOVIET ECONOMY

One of the wonders of the twentieth century is the transformation of one-fifth of the land area of the earth from a backward Czarist state with vassal nations still in the feudal stage to a modern industrialized confederation of fifteen republics to form an advanced socialist society. Despite two devastating wars, economic sanctions and diplomatic ostracism for many years; despite the continuing drain on resources to aid fraternal and developing countries; despite the need, in the face of official U.S. hostility, to devote so much materiel to the maintenance and development of its military program, the Soviet Union has, in the 60 years of its existence, climbed to the forefront (second only to the United States) in its place among the world powers in economic terms.

Of course, it is the purpose of this entire book to analyze what has been done, what is being done, and what will be done to advance the aims of the Soviet Union. And what has been done is phenomenal. But no society is perfect, and as I have gone along, I have made some mention of the problems being faced by the country—for a variety of domestic and international, objective and subjective reasons.

In every country, in every city, even in every home—there are problems. And as one problem is solved, another problem emerges. That is the way of the world. But where there is recognition of the problem, an understanding of its cause, the will to overcome it, and a sound basic structure the problem can be solved. The problems in the Soviet economy, I am convinced, will be solved.

This chapter is devoted to the main economic problems I encountered. When I became aware of a problem, I did not hesitate to ask about it and, if the answer was not

forthcoming, or if it did not satisfy me, I asked again, and again. And that is what I am going to write about now.

GROWTH RATES

As this book is being written, the rate of growth of the Soviet economy has noticeably slackened in comparison with earlier periods. In each of the 15 years from 1961 through 1975 inclusive, the index of industrial production increased somewhere between 6.5 percent and 10.0 percent, with a compound average growth rate of 8.2 percent. These data showing the stability and high rate of growth provide striking evidence of the superiority of the socialist economic system over the capitalist system.

But since 1975, during the Tenth Five-Year Plan period, the pace of growth has slackened. During this period the annual rate in industrial production has been less than 5 percent, with a similar deceleration in such indicators as productivity of labor, national income, and per capita real income. In 1979, industrial production increased only about 3 percent. True, the Five-Year Plan set slower growth rates, but actual results fell considerably short of the plan. The lower targets themselves, and the failure to meet them, reflect problems faced by the Soviet economy at the present stage.

Let me emphasize the difference between *deceleration* and *decline*. Even at the slower pace, *production and living standards are growing steadily.*

Following the lead of the CIA, Western journalists frequently slant their articles about the Soviet economy to infer that an actual decline in production is taking place. They are very glib in announcing "crises" in the Soviet economy, when a comparable situation in a capitalist country would be characterized as one of high prosperity.

Further, despite the deceleration of recent years, the USSR and the other socialist countries continue to gain economically in competition with capitalist countries. For one thing, the average growth rate of the other CMEA countries is somewhat ahead of that of the Soviet Union at this time, so that the deceleration has not been general throughout the socialist community. For another, the decade of the '70s is marked by the slowest growth rate in the industrialized capitalist countries since the 1930s, punctuated by crisis declines. So that actually, in comparison, the socialist

community is gaining as rapidly as formerly.

The slower growth rate of tbe Soviet economy is not the inevitable result of having reached a certain level of output, nor of some systemic weakness of socialism. There is every possibility that its economic growtb will again resume a faster pace.

What, then, are the reasons for the deceleration in the past several years? Here are my opinions, based on observations and conversations in the Soviet Union, and on study of relevant written material.

INTERNATIONAL FACTORS

Some factors are outside the control of the Soviet leadership. Others result from political decisions imposing large immediate expenditures, even though they promise corresponding long-run rewards in some cases.

An example of the latter type relates to the acceleration of the world revolutionary and national liberation movements. A decade ago tbere were only two recently liberated developing countries building a basis for socialist societies and looking toward the USSR and other European socialist countries for aid. Now there may be as many as a dozen.

Vietnam and Laos, baving won tbeir wars of liberation, are engaged in far-reaching programs of reconstruction to repair war damages and to build modern socialist societies. Cuba has passed through its most difficult years and is now on the highroad of all-round socialist construction. In Africa at least a half dozen countries need economic and technical assistance to modernize their economies on the way to socialism, and several of them require substantial military assistance against counter-revolutionary intervention. The armed guerrilla struggle for liberation from apartheid semi-slavery in southern Africa is approaching its climax.

In all these situations the socialist countries provide the main support for economic development, and, where necessary, military assistance. This is all the more so because tbe United States and some otber capitalist countries engage in all-out economic warfare against many of the developing countries that are trying to go the socialist way. In a number of cases, U.S. agencies are also involved in military or para-military interventions and disruptions.

In particular, the United States has rapidly increased its sale and gift of arms to Asian, African, and Latin American countries wbosc governments are willing to support neo-colonialist objectives.

The cost to the socialist countries of assisting progressive regimes and liberation struggles is mounting. And the Soviet Union bears the largest share of that burden, absolutely and relatively. Tens of thousands of the most capable Soviet engineering, scientific, medical, and technical personnel are helping these countries, depriving domestic projects of their talents. The capital cost to the Soviet Union for financing and equipping these development projects mounts up into the billions of rubles.

For a socialist country, there are no "dividends" from the armament industry, no superprofits for the manufacturers. It's all drain. It bampers gains in living standards and economic growth. (There's growing recognition that armament expenditures are a detriment to the economy and mass living standard in the United States too, but so far the relatively few who profit from the armaments boom have much more influence on U.S. policy than the vast majority who suffer from it.)

In the long run, aid to countries building socialism will bring return benefits to the Soviet Union and other developed socialist countries, through trade, mutual assistance agreements, cultural relations, etc. But for the present, tbe acceleration in tbe world's revolutionary changes results in a temporary economic drag.

Related to this cause of economic deceleration is the pressure of the strategic arms race imposed on the Soviet Union by tbe United States and other NATO powers. On a scale unsurpassed in peacetime, under presidents Ford and Carter the Pentagon has embarked on a new speedup of domestic military spending, including a buildup of strategic weaponry overtly directed against the Soviet Union. And other NATO powers – especially the Federal Republic of Germany and, allied to the United States, Japan – are also conspicuously increasing their military spending. Involved here is not only the amount of U.S. spending, but the introduction of wbole series of new, destabilizing weapons, such as the cruise missile, the Trident Submarine, the proposed neutron bomb, MX mobile missile, first strike nuclear weapons in Western Europe.

It is obvious that tbe Soviet Union has been forced to

divert material resources and some of its most talented scientists and technicians to meet the mortal threat implicit in this renewed acceleration of the arms race. Soviet budget figures merely give a financial measure, but do not reveal the strain on key strategic materials and diversion of personnel.

I give no credence to the CIA "corrected" figures on Soviet military spending, crude statistical forgeries designed to assist the Pentagon to get larger appropriations through scare tactics. But I know that the pressure of the military threat imposed by the anti-detente forces in the United States is serious.

Indeed, a supplementary motive of U.S. imperialism in stepping up the arms race is specifically to put pressure on the Soviet economy. There are, in addition, other measures taken by the U.S. Government designed *primarily* to place heavy economic burdens on the USSR; the continuing embargoes on Cuba and Vietnam are a prime example. U.S. Government sources inspire press comments gloating over the cost to the Soviet Union of aid to Cuba. They know that the USSR and other socialist countries will give whatever assistance is necessary to help the Cuban and Vietnamese people overcome the effects of embargo, as well as aid to offset the criminal refusal of Washington to pay the billions in reparations due Vietnam.

The same motivation is behind the continuing U.S. economic discrimination against the USSR; the use of a negative export licensing procedure to prevent the sale of advanced technology and the U.S. attempts to block other countries' deals with the USSR.

Yes, all of these pressures eventually boomerang, and that is becoming increasingly evident. The arms race, economic warfare against socialist countries and interventionist policies extract a terrible and mounting price: they have contributed substantially to the stagnation and decline in the U.S. living standards of masses, to increased racism, anti-Semitism, and other right-wing phenomena, to inflation and the decline of the dollar, to the physical disintegration of railroads and many city centers, and other symptoms of decay.

True, these policies are profitable to sections of the capitalist class. Exploiting groups have always been willing to sacrifice the economic health of the country and the

lives of working people to pursue expansionist and counter-revolutionary aims. But never have the costs been so severe, or the "benefits" so uncertain.

Indeed, the cost to U.S. working people is greater than that borne by the Soviet people. In the United States there is a deterioration in the whole structure of life, while in the Soviet Union the cost is limited to a slowing in the rate of improvement. Thus it is to the mutual advantage of U.S. and Soviet people to end the arms race and the Pentagon-CIA interventions all over the world.

There's another related factor contributing to the deceleration of Soviet economic growth. At the beginning of the 1960s, the Soviet economy was harmed by Mao Tse-Tung's sudden severance of economic relations: equipment ordered by China was left undelivered and unpaid for owing to China's refusal to accept it, while commodities contracted by China for delivery to the Soviet Union were not forthcoming. Again, in 1969-70, economic damage was done by large-scale Chinese border raids which forced an increase in the Soviet military budget and deployment of troops and armaments along the several thousand kilometer border with China, which had been virtually open during the 1950s. As this is written, that pressure is increasing. Mao's successors have become still more belligerent and have openly lined up with the most reactionary forces in the capitalist countries, while the U.S. opponents of detente are happily "playing the Chinese card", by helping the aggressive military buildup in China.

I have no doubt that a decisive turn toward real disarmament, toward carrying out the full complex of Soviet-U.S. agreements concluded in 1972-74, toward "making detente irreversible"—in the words of Brezhnev—will be followed by a marked upsurge in Soviet economic and social progress in every respect.

That, however, is not the main motive of the Soviet leadership in striving so hard for peace and cooperation with the United States. The prime factor, of course, is to eliminate the danger of nuclear war. Nor will the Soviet leadership yield on what they regard as vital questions of principle—such as non-interference in their internal affairs, and support for liberation movements all over the world—in order to gain what would then be only superficial economic concessions from the United States.

Then, some wholly desirable internal decisions have the effect of slowing growth in the short run.

A conspicuous example is the tremendous investment in agriculture. Soviet investment in agriculture in this decade far exceeds that in the United States or in any other country. Through this huge program, described in detail in Chapter V, the Soviet Government has undertaken to overcome the climatic and soil handicaps imposed by nature.

These enormous investments give a slow rate of return. Industrial investments may be expected to yield additional production equal to the amount invested within 5 years – that is, to "pay for themselves" in that period. Agricultural investments, especially in "infrastructure" such as irrigation and drainage projects, may take three times longer to yield an equivalent increased output. Thus, emphasis on these investments may be expected to slow up the total growth of output to some extent.

But in the long run, if accompanied by improvements in economic management of agriculture, they will yield a decisive improvement in the amount and variety of foodstuffs to the population and of technical crops to industry, thereby significantly stimulating faster and steadier all-around economic advance.

Then there is the effect of the increased share of total investment and development expenditures in Siberia and the Far North. This program is necessary in order to get at the areas' vast natural resources and to improve the relationship between the location of these resources and their use. But investments and all other costs in the Far North are two or three times what they are in the rest of the country. In some cases, such as the oil and gas fields of Western Siberia, I believe the rich yield fully compensates for the increased cost. But this does not apply, at least in the short run, to other Siberian projects, such as the BAM (Baikal-Amur) railroad, a major project of the decade.

In part, however, these costs are offset by the participation of other socialist countries, and some capitalist countries, in exchange for materials to be supplied for these investments. But on balance, financing the northern developments probably does have some bearing on the slower growth rate.

In addition, there is another factor; the slogan of the Tenth Five-Year Plan is "Quality and Effectiveness". In the past, quality control in many Soviet enterprises was inferior to world top quality standards. From observations in the plants we visited, as well as from general statistics, we could see that the proportion of goods obtaining the highest "quality mark" is still low, but that substantial progress is being made. Such progress was particularly evident, for example, at the radio-electronics factory in Riga.

In 1967 the Soviet Union started to award the quality mark to goods that measured up to the highest world standards. By the start of 1971, 2,800 spicific items manufactured by individual plants had been so qualified. At the start of the 10th Five-Year Plan, in 1976, there were 27,648 top-quality items; and the number doubled again by mid-1978, halfway through the 10th plan period, reaching 54,000. During the same two and a half years, the number of enterprises awarded the quality mark for their overall performance increased from just under 4,000 to about 7,400. (*Ekonomicheskaya Gazeta*, No. 32, 1978.)

Modernization of equipment and improving production setups, as well as introduction of more rigid standards of quality control, often entail a temporary drop in the volume of production, even though the real content of output is improving. This can lead to a misleading statistical slackening of the growth rate.

All of these objective factors, international and domestic, have a significant effect on the Soviet economy. Yet they do not account for all of the deceleration of the growth rate. Subjective factors are also important – certain shortcomings in planning and management of the economy, methods that lag behind changing levels and standards of production. Indeed, Soviet economic literature, and Soviet economists, diplomats and journalists we've talked to are unanimous in considering the internal shortcomings the main cause of deceleration, considerably more important than the external pressures.

There is recognition at the highest level that the situation has become serious. At the same time, there has been intense work done to find solutions. President Brezhnev's speech to the Plenary Meeting of the Central Committee of the CPSU, in December 1979, featured detailed discussion of the weaknesses and the directions that necessary remedies must take.

Each December the Chairman of the State Planning Committee of the USSR (GOSPLAN), N.K. Baibakov, presents to the Supreme Soviet of the USSR the proposed plan for economic and social development for the following year. This updates and adds details to the five-year plan schedules.

At the beginning of his report, Baibakov gives a preliminary summary of the results for the year drawing to a close, noting outstanding accomplishments and particular shortcomings. In December 1977, fully 40 percent of summation consisted of criticisms, and especially sharp criticisms, so that the overall impact of the report was somber, in no sense congratulatory.

Perhaps the most decisive indication of difficulty was the announcement that in the first two years of the Tenth Five-Year Plan, the productivity of social labor had increased 7.4 percent. That would be an outstanding result for a single year. For two years, it meant an annual rate of increase of 3.7 percent, far below the norm for the Soviet economy. The slow increase in labor productivity resulted from the combined effect of a number of factors. Baibakov singled out one for special emphasis:

"Very big reserves for the growth of effectiveness of social production exist in capital construction. In the course of discussing the five-year plan at the October Plenum of the Central Committee of the Communist Party in 1976 and in the Fifth Session of the Supreme Soviet of the USSR last year it was emphasized that it was necessary to concentrate capital investment on the construction of the most important economic objects to shorten the period of construction, to reduce the listed costs and volume of uncompleted construction. However, I must say that the state of affairs in capital construction, and first of all in bringing productive capacity into action, improves slowly. The scattering of capital investments over a large number of construction projects continues. As a result the normative terms of construction are broken and significant means are frozen in uncompleted construction." (*Pravda*, December 15, 1977.)

This is a long-standing shortcoming. I wrote about it in an article about the Soviet economy, after returning from a trip to the USSR in 1965 (Victor Perlo, "Soviet Economy, Organizational and Structural Problems", in *New World Review*, February 1966.)

There are yearly exhortations and decisions to handle this particular problem, but it has not been solved. The consequences become more serious as the scale of projects increases and as the dependence of the whole economy on their timely completion becomes more marked. I discussed this problem in 1977 with a number of Soviet economists, and in most detail with Academician T.S. Khachaturov, chief editor of the journal *Voprosi Ekonomiki* and author of an important recent work, *The Economy of the Soviet Union Today*.

He averred that the scattering of investments goes back to the 1930s: "We want to build more and more, more than the capacity of our contracting organizations and machine building factories," he said. Each year the ministries and Union Republics submit for approval two or three times more capital investment projects than can be handled. The attitude of the ministries tends to be: "The State pays the cost of capital investments. As far as we are concerned, they are free, so let's get what we can. It makes it easier to fulfill the plan."

In addition, the contracting organizations are always looking for additional projects. For example, if a contracting outfit knows a large project will be completed this year, it wants to keep its labor force together. So it suggests another job, for which there might be insufficient resources, just to keep the workers busy. Or, if one of its projects cannot be finished on time because equipment or materials were not delivered on schedule, it would have another project on hand to shift the labor force to.

In his book, Khachaturov tells more about this problem. As he puts it, the designing of projects takes too long—two or three years. Then: "Construction periods are still too long. Large projects take from 8 to 12 years and considerably exceed the norms, which are themselves excessive... In a number of instances, the long construccion periods are supplemented by a long start-up period, not infrequently of three to five years, as a result of unfinished construction work, defects in equipment, errors in design, lack of training of the labor force and other factors."

Because of this series of delays, 15 or more years may

pass and "by the time the enterprise begins working at full capacity, it is already technically obsolete and the large expenditures do not produce the required effect." (T. Khachaturov, *The Economy of the Soviet Union Today*, Progress Publishers, Moscow, 1977, pp. 303, 304.)

To improve the situation, Gosplan chief Baibakov announced that for 1978, 64,5 percent of construction in industry and 58 percent of the total volume of all construction work must be concentrated in projects approaching completion. To accomplish this, it would be necessary to limit the number of new projects costing more than 3 million rubles each, and for ministries and Union republics to limit the number of new smaller projects. Similar generalized expressions of determination to limit new projects bave been announced in previous years, but without decisive results.

In Moscow, in 1977, we were given an example of how Gosplan attempts to limit new projects. Both Gorky and Novosibirsk need subway systems, and asked for them. But examining all the facts, Gosplan decided that Gorky's needs were more urgent, and that Novosibirsk would have to wait until the 1980s. But later, in Novosibirsk, we were told that tbat decision did not stick, and that Novosibirsk would build a subway, or at least start it, during the current five-year plan period.

Is this a case where, under local pressures, both cities were authorized to start subway systems, although resources were inadequate to complete both in the scheduled time, and where, finally, the people of both cities will be losers? I was unable to authenticate these facts which were, perhaps, not quite as presented to me. But they appear to be characteristic of what frequently happens.

The excess time for completion of capital construction projects is not absolute. Khachaturov gives examples of important projects completed ahead of schedule. The most decisive projects, which are given very top priority, are finished approximately on time, or even ahead of time. Some major projects have been completed on schedules that have never been matched by capitalist countries, i.e. the great hydropower projects, the oil and gas installations of Western Siberia, the BAM railroad, the Nizhnekamsk truck factory (KAMAZ).

But the lag in completing and bringing to full production

major enterprises has resulted in serious underfulfillment of the plans for plastics and synthetic fibers, paper and related products, and other items of general economic importance as well as consumer goods.

At the end of 1970, uncompleted construction work amounted to 73 percent of the capital investment during that year. The Ninth Five-Year Plan called for reducing that to about 60 percent by the end of 1975 (*State Five-Year Plan for Development of the Economy of the USSR, 1971-1975*, Politizdat Publishing House, Moscow, 1972, pp. 231, 352–in Russian). In fact, it was 76 percent at the end of 1975, and the Tenth Five-Year Plan called for reducing the ratio to 65 percent by the end of 1980. (E.A. Ivanov and V.A. Pchelkin, *Construction Program of the Xth Five-Year Plan*, Economika Publishing House, Moscow, 1976, p. 10–in Russian.)

Will there be greater success in this respect during the Tenth Plan than during the Ninth? According to what we were told in Moscow, and judging from the tone of Baibakov's December 1977 report, tbe first two years of the Tenth Plan period showed no improvement.

A related goal is to reduce the cost of the labor and materials used to construct the enterprise building as compared witb the amount spent for the machinery and facilities with which the enterprise building is equipped for the active production process. Here, apparently, some progress is being made through better design and more efficient and economical construction methods.

The overall fulfillment of the five-year plan depends on successfully concentrating investments and on completing construction and installation projects on time as much as on any other single factor.

This can be seen from analyzing the relationship between scheduled capital investment increases and scheduled production increases. Whereas the volume of capital investments increased between 40 and 45 percent during each of the previous five-year plan periods, an increase of only 26 percent is called for in the Tentb Five-Year Plan. Most of the rise is concentrated in the first three years of the plan, with the annual amount supposed to flatten out in 1979 and 1980, while industrial production is supposed to accelerate in those two years. In 1980, overall industrial production was supposed to increase 8.2 percent, and

consumers goods output 9.0 percent, according to the plan as originally adopted. ("Law of the Union of Soviet Socialist Republics on the State Five-Year Plan of the Economic Development of the USSR for 1976-1980", *Pravda*, October 30, 1976.)

Obviously, this projection contemplated success in concentrating capital investments, with a number of key projects being completed in 1978, and especially in 1979, so as to permit the rapid increase in output toward the end of the five-year period. If not, there would be some lag behind the scheduled rise in output and, probably, in living standards.

In fact, there was no improvement in this regard, and partly as a result, the plan for 1980 calls for an increase of only 4.5 percent in industrial production.

What has to be done to end the scattering of investments, and to ensure the timely completion of projects? The solution has been given repeatedly by the Soviet leadership; its essence lies in restricting the value of new capital construction projects to a scale that can be accomplished, with available resources, in a technically feasible, relatively short period.

Since all large projects over a specified size must be approved by the Council of Ministers – that is the Government of the USSR – this is where the responsibility lies, and this is the body that has the power to control new large investments. Centralized planning controls are firm and reasonably effective in most respects. Why should they not be for such a decisive economic factor as capital investment projects?

I put this question to Academician Khachaturov. He said that, apparently, individual regions of the country, Union republics, ministries, etc., had sufficient influence to have their pet projects placed in the plan, regardless of their negative impact on the overall investment program.

In the United States, "log-rolling" by Senators and Congressmen from various states and districts results in the adoption of many unnecessary or even harmful projects. These lead to large expenditures of the taxpayers' money for the profit interests of particular companies and for the prestige of particular politicians.

In the Soviet Union, it is not a question of private profiteering: on the contrary, the projects are for the benefit of the people in the area, and for the benefit of the entire country from the added production that would result. In a socialist society, without antagonistic classes, therefore, final choice among many desirable projects must be centrally determined on the basis of the greatest good for the greatest number in the shortest time and at the least cost. The less urgent undertakings have to be postponed or eliminated in favor of those with priority importance to the total economy.

But for this to work, tough choices firmly adhered to have to be made at the top. When there is capacity to construct and equip only one subway at a time, the people of both competing cities will be the ultimate beneficiaries of a firm decision at the top to construct one at a time.

President Brezhnev, discussing the harmful effects of scattering investments said, in the aforementioned speech:

"One gets the impression that the State Planning Committee does not offer resistance to the pressure of departmental and local interests, which weaken the force of the plan and upset the balanced growth of the economy. The leadership of the State Planning Committee should show greater firmness in upholding national interests. The Central Committee of the CPSU will give it every support in this." (*Pravda*, November 28, 1979.)

The last phrase about "every support" is the operative part. In the last analysis, only the top political leadership of the country has the power to resist local pressures and enforce strict adherence to a balanced investment plan.

Another extremely important element was examined very convincingly by Pavel Podshivalenko, deputy chairman of the All-Union Bank of Capital Construction of the USSR, and a professor. He focuses on the harmful effects resulting from the division of responsibility for an individual investment project. A construction organization has responsibility for construction, mounting of equipment, etc. An industrial ministry or particular enterprise has responsibility for delivery of the necessary equipment. And an engineering institute has responsibility for design, blueprints, architectural work.

There's no (or insufficient) coordination of the work; no central agency with power to enforce the proper jibing of schedules; uneven material interest in the separate outfits regarding the timely completion of their share of the job.

This system worked in the 1930s and 40s, when there

were fewer projects and each was smaller in scale; when a member of the Council of Ministers could ride herd on the participants.

But in today's conditions, for each major project a central coordinating agency, or prime contractor, is needed, one responsible for all aspects of the construction, on a turnkey basis, with material rewards for one-time completion and for satisfactory operation, as well as for flexibility in contracting with other participants.

Podshivalenko indicates situations where a construction trust might be the most suitable turnkey contractor; others where a big industrial trust can handle the entire project, and still others where engineering firms can be overall prime contractors.

He notes that attention should be paid to analogous methods in capitalist countries, and that similar systems work effectively in the German Democratic Republic.

That the country's leading economic scientists regard this as a key proposal is indicated by the fact that Podshivalenko's was the lead article in the March 1979 issue of *Voprosi Ekonomiki*, the organ of the Institute of Economics of the Academy of Sciences of the USSR.

For a country as vast and varied as the USSR, overnight introduction of a new method by central decree is, at best, risky. With respect to this, as well as to various other proposals for improving the management and planning of the economy, the Soviets are making experimental applications to test the general validity of the approach, to iron out bugs, and, if the method works out positively, to determine the best methods for its general introduction. (P. Podshivalenko, *Task of Shortening Terms of Construction*, in *Voprosi Ekonomiki,* No. 3, 1979).

During the last several years, such an experimental method was applied to industrial construction projects in the Byelorussian Republic, and later in Lithuania, with outstanding results. Among other things, this method drastically reduced the number of projects, centralized responsibility for a particular job, and based payments on completion of a project, not on having it partly done. Now this "Byelorussian method" will be applied, along with other improvements, throughout the USSR. (M. Chentemirov, in *Trud*, November 11, 1979.)

RHYTHMIC PRODUCTION

Early in June 1977 we went through the largest plant in Armenia, which makes electric motors and small generators (See Chapter III). We noticed some lines not working and some workplaces not occupied.

On a walkway between two buildings of the enterprise we passed by a bulletin board listing the goals for 1977 adopted by the collective of the factory. One of these caught my eye. It said:

"To increase the share of production in the first ten days to 15 percent and in the second ten days of the month to 22 percent of the month's planned total."

Just think what this means! To reach a month's goal, 63 percent of the output has to be concentrated in the last 10 days! I commented to the young official accompanying us:

"That seems to be a very modest goal."

He answered:

"Well, we have to learn to walk before we can run."

Which implied that the production cycle was even more lopsided than indicated by the figures on the bulletin board. This is not a new factory, the situation had existed for a long time. I asked why. The answer:

"We get supplies from hundreds of suppliers. They tend to make their deliveries late in the month, and the lack of supplies from even a few suppliers earlier in the month forces us to concentrate output at the end of the month."

But that explanation didn't satisfy, or seem wholly reasonable, to me. Over so many years, hadn't there been plenty of time to accumulate several months' reserve stocks of essential items so as to prevent bottlenecks? And if suppliers are late, why would they consistently be just late enough to force concentration of output in the last ten days, but not late enough to prevent catching up by the month-end speedup?

So, after that I went into this question at all factories I visited. The Armenian plant was by far the worst, although not typical of Armenian industry as a whole (See Chapter VIII, National Rights and Economy section). The radio factory at Riga had a pretty good record; the textile factory at Ogre, in Latvia, was quite close to a stable, rhythmic pattern of production; and the problem

didn't exist at the Electrosila trust in Leningrad, where production was concentrated on a small number of large units with a many-month production period.

But in general it is a serious problem for a socialist economy, as, I am told, it is for many capitalist enterprises.

It's clear that an uneven pace of production, which in effect fails to utilize production capacities fully for two-thirds of each month, causes enormous material losses. Nor is it good for the health of workers to have to work many hours of overtime, under great pressure, toward the end of the month. From persistent questioning to try to get at the root of the problem, I concluded, tentatively, that several factors play a part.

The delay in delivering raw materials and components was an important factor historically. Both during the first five-year plans and the postwar reconstruction period, forced-draft rates of production expansion - as much as 15 or 20 percent per year - were achieved. This led to extremely tight scheduling, and every ounce of material coming in had to be used immediately. Workers would respond readily to the call "All hands on deck" ("Avral" – a traditional Russian nautical term, is now used in this connection), and work as hard and long as necessary to meet each month's schedule.

Now, with more modest increased rates of production scheduled, there is much less objective basis for late deliveries of materials. But there are still cases of late deliveries, involving not only Soviet factories, but also other CMEA countries and capitalist suppliers.

However, perhaps more important. in some enterprises the habits of work developed during the earlier time of force-draft effort have continued after the objective need for them vanished.

Here's another factor: workers get paid time and a half for overtime, double time for overtime beyond the first two hours, and high premiums for weekend work. Thus, absenteeism may be high at the beginning of the month as workers "regain their strength" after a strenuous and high-wage "avral" at the end of the previous month.

But the explanation I think summed matters up best was given to me by one of the leaders of the Communist Party of Armenia:

"Where there is weak management there is non-rhythmic production. Where there is good management, the problems are solved and we have steady, rhythmic production."

Perhaps one should amend that to say where there is a strong triad of leaders – administrative, Party and trade union – in an establishment, rhythmic production will be attained, plans will be fulfilled and, where feasible, overfulfilled.

R. Gareev, director of Ufimkabel, a large and famous cable factory in the Urals, writes of his experiences establishing rhythmic production. The article, in *Ekonomicheskaya Gazeta*, gives a brief biography of the author who, like so many Soviet plant managers, began as a worker, studied on the side to become an engineer, was gradually promoted, and was made director of Ufimkabel in 1974.

In that year the average output in the first 10 days of the month was 23.3 percent of the month's scheduled total. In the next year it was raised to 30.7 percent and in 1976 to 31.5 percent. And this is not the limit. Work without dashing and "storming", says Gareev, leads to high productivity of labor, full use of equipment, high quality, etc.

When he first arrived, the shop chiefs tended to blame uneven production on shortages of material and other outside causes. But examination showed it was due to internal factors - insufficient operative planning, lack of organization of production procedures, and lack of up-to-date methods of organization of labor.

"We began," he wrote, "by working out a comprehensive plan for perfecting the organization and administration of production, establishing stable norms of current and reserve stocks of materials and semi-manufactures and work in process at all work stations and departments."

Then, they shifted from a ten-day system to a weekly schedule of rhythmic work. Rewards were established on the basis of calendar-week results. Bonuses were given only if the plan for each week was achieved. This method requires a continuous checkup of the plan status, with measures each morning to eliminate any lags – quickly, precisely, without palavers. In addition, there was continuous improvement in working conditions in the supply of consumers goods and recreational and leisure facilities for workers. New service establishments were set up in shops. Holiday places were made available in the neighborhood of the city

of Ufa and in the Crimea. This resulted in cutting labor turnover in half.

Quality of work is the key, said Gareev. For seven years there have been no returns from consumers. The Party organization steadily works to mobilize the collective for even fuller use of the remaining reserves. (*Ekonomicheskaya Gazeta,* No. 39, 1977.)

THE SOVIET PLANNING SYSTEM

A recent Soviet book on economics states:

"Planning is the central link, the kernel of direction of the economy under socialism and one of the key economic and managerial-organizing functions of the socialist state.

"Planning involves the drawing up of various plans and assignments for developing the economy as a whole and individual industries and enterprises, economic areas and republics.

"Production, distribution, exchange and the consumption of material wealth are organized according to the plan..." (G. A. Kozlov, Editor, *Political Economy: Socialism*, Progress Publishers, Moscow, 1977, p. 98.)

The planning process includes determination of the main directions, the main tasks of development for a given period; projecting the application of scientific and technological advances to production; and, on that basis, working out in a balanced way schedules of production, distribution, wages, farm incomes, investments labor supply and allocation.

The final plan is adopted at the all-Union level, on the basis of generalized calculations and of proposals from various regions, Union republics, industrial ministries, enterprises and groups of workers. The plan that is finally adopted has the force of law. Its underlying objectives are to foster the steady rise in living standards, to strengthen the overall economy of the country and its defense capacity, and to build its international connections to maximum advantage. It pursues a long-range goal of furthering the economic and social structure in the direction of higher stages of developed socialism, and the building of a communist society.

The announcement in 1928 of the first Soviet five-year plan, with its ambitious goal of rapid industrialization, was greeted with ridicule by capitalist economists, businessmen, and publicists. Capitalist economic theory at that time held to the view of the spontaneous, anarchic development of economic life through the interaction of each individual pursuing his own economic interest, as an eternal feature of social life. The attempt to guide economic development through a single plan with definite goals was regarded as a violation of the natural order of society, doomed to failure.

But as it happened, the early five-year plans were an outstanding success, with a profound impact on economic thought and political life everywhere. Industrial production in the USSR DOUBLED IN THE FIRST Five-Year Plan (in less than the assigned time), and doubled again in the Second Five-Year Plan period. And meanwhile collectivization triumphed in agriculture. All this was a dramatic counter-point to the deepest and most prolonged economic crisis in the history of world capitalism.

Since then the advantages of planning have been accepted worldwide. Most socialist countries have adopted systems similar to that of the Soviet Union, and increasing numbers of developing countries have plans embracing major state-owned sectors of the economy. Even capitalist corporations have their private plans, while capitalist governments attempt to develop overall plans—although never successfully.

Overall planning, to be successful, requires socialization of the basic means of production and finance, so as to secure a balance in the economy. The class conflicts under capitalism, the conflicts between the special interests of separate enterprises and the collective interests of the capitalist class, cannot be overcome by government regulation.

As the Soviet economy advances, the methods of planning must keep pace. At the start, there were a comparatively few key major enterprises. There were shortages of everything, and it was imperative to have an all-out drive to get as much as possible of essential goods, at no matter what cost. Centralized control over many details of operation was a necessary part of the planning system. The emphasis was on quantity: people needed shoes and couldn't be too particular about the quality. The educational level of executives was low. There was little emphasis on accounting, and many enterprises operated at a loss, supported in effect by government

subsidies. Materials were allocated centrally by the government, and products were sold centrally through government agencies. Enterprises needed money only to pay wages.

In the decades after World War II, the Soviet economy multiplied several times in scale and complexity, transformed under the impact of the scientific-technical revolution. A new generation of well educated specialists took over management of enterprises, which were staffed by workers with decidedly more skill and education than their prewar predecessors.

People were no longer satisfied with bare essentials; and as living standards increased, second-rate items piled up on the shelves of stores. All of the details of operating tens of thousands of big enterprises, of setting prices of millions of commodities, could not be determined in Moscow.

The old system of planning in some respects was beginning to act as a brake on economic progress. It had to be made more flexible, allow more scope for the initiative of enterprise managers, collectives of workers and farmers. There had to be more emphasis on quality and on a wide assortment of goods. Sound accounting methods were needed, and enterprises had to be financially sound – that is, to operate at a profit. Wages and salaries had to be better related to workers' actual contribution to the national income.

During the 1960s there were long discussions and debates, in which economists, engineers, plant managers and workers took an active part, over the character of the changes that were necessary. Particularly important roles were played by such outstanding economists as Trapeznikov and Liberman.

A mark of the special type of democracy that exists in the Soviet Union was the active participation of literally millions of people in the discussions; the writing of hundreds of thousands of letters to *Pravda* and other newspapers. While only a few of these could be published, they were systematically studied by the responsible bodies.

In 1965, following the decision of a Plenum of the CPSU Central Committee, the economic reform was adopted and gradually put into effect beginning in 1966. Much attention was paid to working out an improved system of material incentives for workers, engineers and managers. The objective was to create conditions that would encourage people to work in a way that would advance at the same time the interests of society, of the separate enterprises, and of the individual workers.

The economic reform contributed to accelerated progress in efficiency and overall production. The figures on annual rates of increase in industrial labor productivity tell the story:

Period	*Annual Rate of Increase in Industrial Labor Productivity*
1950-55	8.2
1955-60	6.5
1960-65	4.7
1965-70	5.8
1970-75	6.0

Source: Calculated from *Narodnoye Khozaistvo SSSR, 1922-1972*, p. 56; *Narodnoye Khozaistvo SSSR, 1975*, p. 212.

Productivity surged rapidly in the early 1950s, when the benefit of postwar technology in new plants and reconstructed war-damaged plants was having maximum effect; but increases slackened towards the end of the decade, and especially at the beginning of the 1960s. The economic reform contributed to a noticeable acceleration, from 4.7 percent per year in the period 1960-65 to 5,8 percent in the first five years of the economic reform and 6.0 percent in the next five years.

As this is written the Tenth Soviet Five-Year Plan is finishing its third year. Soviet planning not only made possible the unprecedentedly rapid industrialization of a great country; it ended permanently the cyclical crises characteristic of capitalism; it made possible full employment without inflation. And it accomplished a steady, all-round rise in mass living standards such as no previous society ever approached.

Actually, the system of planning and management of the economy is under continuous review and updating. Sometimes new proposals are tried out experimentally at a few enterprises or in one area. Computers are playing a gradually increasing part in the planning process, especially in helping to decide between different plan variants.

An important development during the past decade has been the growth of *obyedineniyas*. These are amalgamations of separate enterprises, shops, and research establishments into a single corporation-like structure. They permit centralization of accounting, procurement of supplies and sale of final products, and a greater degree of vertical integration within unified control.

Another change is the increase in the relative weight of state farms and the evolution of collective farms to the use of methods of state farms in accounting, payment of regular wages, and other features of businesslike management. This makes possible a better integration of agriculture in the overall system of planning.

MATERIAL INCENTIVES

The wage structure plays a very important role in Soviet economic management and planning. The classical formula: "From each according to his ability, to each according to his work", implies that people are motivated to do their best and are paid according to the results of their work. They are stimulated to do their best by a combination of moral and material incentives. The former are ideological and political support for the socialist system, confidence in the government and the Communist Party, a belief that they are contributing to human progress. The educational system, literature and the media aim to buttress the moral incentives.

The material incentive is the desire to improve one's own living standards – material and cultural – and those of one's dependents. To be effective, it is necessary to have a system of wages, salaries, and bonuses which reflects the real contribution of each individual with a high degree of accuracy. Failure to do so will lead many people to feel that they are unjustly treated and will reduce their incentive to work well.

The general structure of wages consists of two parts:

– First, a scale of basic wages and salaries, for each occupation, depending on the degree of skill, training, etc. This is set by the State Committee for Labor and Social Affairs, in agreement with the trade union. It includes such features as shift differentials, differentials for dangerous or unhealthy work, and for work in regions of harsh climate.

– Second, a system of bonuses, linked to the effectiveness with which workers carry out their tasks. Some bonuses are paid to individuals, some to brigades or other collectives of workers, and still others to all the personnel of an enterprise, based on the overall performance of that enterprise.

The system of bonuses is particularly crucial. Historically, it included a series of separate bonuses for fulfilling and overfulfilling the production plan, for economizing on materials, and for other separate indicators of the effectiveness of work done.

By the 1960s this system was out of date in several respects. It was based mainly on the quantity of goods produced, without regard to assortment or quality, or to the cost of production. For example, the personnel of a furniture factory, by turning out old-fashioned heavy pieces, might have profited more than by producing the more desirable lightweight modern pieces.

Also, by getting approval of a production plan with low goals, the workers of an enterprise could receive bonuses for exceeding what was really less than they should have produced.

The economic reform of 1965 improved the bonus system and increased the general level of these rewards. A major source of bonuses became the profits of the enterprise. Thus, it was advantageous to produce better quality, and hence higher-priced, goods, and to produce them with lower labor and material costs.

Part of the profits are turned over to the state, for centralized investments – somewhat similar to a corporate income tax. The substantial remainder is at the disposal of the enterprise, and is divided into three funds:

– A fund of material incentives, out of which individual and group bonuses are paid.

– A fund to provide for social needs of the entire collective, such as housing, palaces of culture, children's camps and vacation resorts.

– A fund for investment, to be used at the discretion of the enterprise.

Where applied flexibly, with good general management, the results have been excellent. We visited an outstanding example, the Ogre Textile Combine in the town of Ogre, near Riga in Latvia. This plant, which starts with yarn and ends up with finished, high-style garments, was built during the late 1960s. It's name in the Soviet manner is "50th Anniversary of the Young Communist League", and it is manned and womanned mainly by young people. Each year the combine gets 250-300 new young graduates from a special technical school.

Everything about the physical aspect of the shops is pleasant: good lighting, air conditioning where appropriate, absolutely clean air – no brown lung from working in that

plant! The room where the yarn, on circular frames, is spun into fahrics provided a colorful, and orderly, picture.

The 5,850 workers have good social facilities. In addition to existing housing, units for about 1,000 people per year are in the plan. Each year a new kindergarten for 280 tots is built. Wages are increasing–from 154 rubles per month in 1975 to 179 rubles monthly in 1977, and premiums linked to increased production and improved quality accounted for a good part of the increase. Between 1971 and 1976 production increased 86 percent, partly because not all sbops were yet in operation by 1971; but output was scheduled to rise another 15 percent by 1980.

Liberal honuses are paid for top quality output, for inventions and rationalizations. Workers get 70-80 percent of the value of material saved. And the factory management has authority to change the details of the honus system at will. Substantial use is made of the socialist competition, with 10 percent of all bonus funds set aside for the winners. And opportunitics for promotion are good.

I talked with one of the older graduates of a special technical school, Alexandra Alexeyeva. After 15 years experience in the industry, including eight years at Ogre, sbe is chief of the 18th sewing shop of the combine, with a salary of 300 rubles a month.

But not all enterprises did this well. Certain general shortcomings became evident, which limited the gains.

The regulations governing execution of the new system were extremely complicated, making it difficult for workers to see how and to what extent their own labor might be to their individual advantage and that of their fellow workers. The system was introduced gradually, over a series of years. Construction organizations, where cost overruns are particularly severe, were left out altogether for a long time, and have never been completely involved. Thus an enterprise working well under tbe reform might be thwarted in its efforts through failures of a supplying enterprise not operating under the new system.

In the formula which finally evolved, the value of sales has had more prominence than the profit, or net value, of production. Thus in some cases enterprises can still get higher bonuses by producing goods using expensive raw materials and little processing then by producting goods using inexpensive raw materials and requiring more skilled work.

The attempt to make it worthwhile for enterprises to set and reach higher goals has not been wbolly successful. Penalties for not meeting delivery schedules were not enforced. If a schedule I saw in a Surgut plant was typical, the scale of bonuses paid to workers for finding ways of economizing on materials is still trivial. Relatively small rewards are allocated to workers who improve productivity through rationalization schemes and inventions. Aside from the mechanics of setting up incentive systems, there is significant theoretical disagreement among Soviet economists as to the proper relationship between productivity and wages.

Plant managers I talked to said a typical relationship would be a 1 percent increase in wages for a 2 percent increase in productivity. Tbe authors of a new book on the political economy of socialism write:

"If this fund [the wage fund–*V.P.*] grows at the same rate as labor productivity, that will substantially limit the possibility of accumulation and further development and impovement of production. Furthermore, in such a situation society will be unable to enlarge social consumption funds to the necessary extent. Priority growth of labor productivity over growth of pay is therefore necessary for objective reasons." (Kozlov, op. cit., p. 191.)

But T. Khachaturov, in his recent, authoritative book on the Soviet economy, disagrees:

"The theory that enjoys wide currency that the growth rate of labor productivity should always outstrip that of wages is hardly justified, as this would mean an increase in the share of accumulation in the national income, which is only possible for a limited period. In our opinion, wages should increase in step with the rise in labor productivity and in such a way as to stimulate this rise." (Khachaturov, op. cit., p. 187)

In fact, according to Khachaturov's calculations, during the 1960s wages increased about three-fourths as fast as productivity.

In a peculiar way, this echoes a common argument in capitalist countries. Emloyers argue tbat if the workers get the "full" percentage increase in productivity, there will be no reward for capital, which contributed improved machinery and management. Trade unionists argue that what workers are demanding is at least the *same* percentage increase as the increase in productivity, which would only

maintain their previous share of total production.

Suppose the net product is $100, and $40 goes to labor, $60 to capital. Now suppose productivity increases 20 percent, so that the net product becomes $120. If wages increase 20 percent, to $48, then capital's share will also be increased 20 percent, to $72. The shares of each will be the same.

The capitalists, by trying to put over on the workers the notion that they should get a smaller percentage increase in wages, are trying thereby to increase their share in the net product, and rather sharply.

In the Soviet Union, there are no capitalist to get a larger share. A less-than-proportional share of increased productivity for wages will mean that an increasing share of the national income is going for investment, for foreign aid, for administration, etc. In fact, the share of investment, the main item in this group, in the national income has been stationary, or declining slightly. Therefore labor income should increase about in line with productivity. However, since the share of labor income distributed socially, and not through wages, is increasing slightly, wage rates should increase a little less rapidly than productivity, to allow for this—but only a little less.

Thus, I conclude that Khachaturov's position is the correct one. *However, this does not mean that wages of individual workers or collectives of workers should increase in full proportion to their increased productivity.*

Some wages have to be increased, regardless of productivity. For example, the rapid increase in employment at high premium pay in the Far North absorbs a disproportionate part of the total allowable increase in wages. Also, at times it is necessary to increase the wages for certain occupations, regardless of productivity, when shortages arise of people wanting to work in these jobs. These factors, and the gradual increase in the proportion of workers employed in social services, mean that on the whole, in general, wages of particular groups of workers should increase somewhat more slowly than their productivity.

Variable factors could change this relationship. Thus, when it is possible to reduce the share of administrative and/or military expenditures, wages can be increased more rapidly. On the other hand, when crop failures cause a lag in the supply of some consumers goods, the pace of wage increases may have to be curtailed temporarily.

But despite all of these qualifications, recognition of the correctness in principle of Khachaturov's statement would give the planners in any socialist country increased scope to use bonuses as a means of stimulating the best efforts of workers and employees.

A NEW ECONOMIC REFORM?

By the late 1970s it became evident that the economic reform of 1965 needed a substantial overhaul and renewal. The doubling of the economy, the increasing complexity of its interconnections, its broadening international involvement, called for a more sophisticated, flexible system of economic management. The further increase in the technical and administrative knowledge of leading personnel, in the skill and education of workers, and the enhanced availability of data processing equipment and know-how in automated systems of management, make further refinements in planning possible.

As noted at the start of this chapter, the rate of gain in industrial labor productivity slackened during the first years of the Tenth Five-Year Plan. This demonstrated that the existing system was beginning to brake progress, and that further improvement is necessary.

In recent years a number of new methods of stimulating higher labor productivity have been tried on an experimental basis. Much publicity has been given to the success of the Shchyokinski Chemical Combine, which operates under a system whereby it is authorized to distribute its wage fund as it sees fit, regardless of how many workers are employed. Thus if the required level of output can be achieved with 10 percent fewer workers, the wages paid per worker can be increased correspondingly. Since there is a general shortage of labor, excess workers can always find alternative employment if they are not needed to man an expanding section of the Shchyokinski Combine.

V. Maier, the economist with whom I discussed income differentials, gave an example of a similar arrangement:

At a plastic factory, the workers took the initiative and set new, higher norms of productivity, based on increasing their qualifications, improving the organization of labor, and using the experiences of advanced sectors. "*A large part of the economic effect of the adjusted norms were used for material rewards.*" One half went to all the workers of the enter-

prise, one-quarter to individuals and groups who contributed most, and one-quarter went to pay premiums for higher quality output.

The overall effect was to increase labor productivity by 25 per cent! Maier and his associate write:

"Broad distribution of this and other advanced metbods of organizing labor and material stimulation would support the growth of social activity of working people, the successful fulfillment of the tasks of the Tenth Five-Year Plan."

They stress in this and other examples not only the substantial size of the bonuses, but the direct participation of the workers in setting up the production arrangement for higher productivity. (Maier and Rutgaiser, op. cit., p. 19.)

In the construction industry, much emphasis is given to the contract system, whereby brigades of workers (numbering typically 4 to 10) contract to complete a certain job for a specified total wage payment. The quicker they do it, the higher their monthly wages.

It is undcrstandable that these and other improvement methods have to be well tested and then introduced with caution. Otherwise fresh imbalances might be created, for example, by a sudden big increase in wages paid without a proportionate increase in the supply of consumers goods.

Again, as in the early 1960s, there are broad discussions underway in the USSR, heading up to a further modernization and improvement in the methods of economic planning and management. Leonid Brezhnev, in his report to the CPSU Central Committee Plenum in December1977, and in subsequent speeches, went into these questions. Similar ground was covered in a series of articles by economics Professor D. Valovoi in *Pravda*. *The New York Times* referred to this new series in a one-sided way, as if it portrayed the Soviet economy in a wholly had light.

Valovoi, on the contrary, said that the results of the economic reform of 1965 were generally good. They created conditions for doubling the economic potential of the country in the next ten years. But all reforms are effective only for a limited time, and then new ones are needed.

Among Valovoi's criticisms was the point that some of the rules called for in the reform were fulfilled only formally or partially. For example, indicators of net output have not been made the main basis of planning, as called for. A decision published in 1974, requiring the fulfillment

of all contracts and orders on time as a condition for premium payments to plant personnel, has not been enforced. He criticized some aspects of price formation, saying that the shortage of spare parts results from setting prices far too low, in relation to the time required to make them, so that enterprises are reluctant to undertake their production. He called for reforms that would correct these and other shortcomings. (*Pravda*, November 10, 11, 12, 1977.)

A Leningrad lathe operator, commissioned by a local newspaper to see whether various machinery factories were improving effectiveness of production, told what he found. (Imagine a U.S. auto worker being commissioned to examine auto factories, to report in a mass circulation newspaper on shortcomings and to make recommendations!)

He focused on situations where plans were far below plants' potentials, and thus, correspondingly, the work norms of individual workers did not give them enough to do. From situations like this "we lose not only rubles, but creative activity of workers".

He called for setting up independent bodies, subject only to the State Planning Committee, empowered to set reasonable production norms for enterprises that would result in setting balanced, reasonably strenuous goals for output and productivity, and a correct definition of the amount of wages and the volume of profits on this basis. (V. Kopeikin, "In Order that Plans Shall be Firm" in *Kommunist*, No. 4, 1978.)

Novosti Press Agency release narrows down production problems to "every eleventh enterprise" which fails to achieve its plan target and thereby holds up progress of the entire economy:

"The times demanded of the economic executive not only scope in affairs, but high competence in solving problems of scientific and technical progress, enterprise and calculations, or, as the chess players say, the ability to see the game three moves ahead. The executive who got behind the requirements of the day found himself in conflict with the course of the Tenth Five-Year Plan towards efficiency and quality of work."

However, according to the release, production shortcomings cannot be pinned only on individual managers. They also involve the failure of the working collective to exercise control and enforce corrective measures. Basically, fault is to be found in "the organizational and mass-scale political activities

of the Party cells, trade unions, the Komsomol, and other mass organizations."

So the appeal of the country's leaders is to the public, to use their organizations to involve the overwhelming majority of workers "in administration and control, in distributing bonus funds, in promoting vocational training and in improving working and living conditions", as well as in "enhancing the production effort".

It is this potential that brings forth the superiority of the socialist social system, *Novosti* says.

Concerning methods of planning and management, it continues, during the Ninth Five-Year Plan period experiments were carried out to improve some aspects. "Now the question is being raised of introducing a more perfect comprehensive system of management, planning and economic incentives.

"Now this problem, it may be said, is 'in the air'. The question is whether its solution will begin piecemeal or in a complex, at the beginning of the year or somewhat later. One thing is obvious – there will be no haste. As they say, measure thrice and cut once. The result will be just what is needed." (*Novosti Release*, January 16, 1978.)

Past experience gives reason to believe that the problems facing the Soviet economy will be solved, that it will continue to advance steadily, with increasing benefit to its people and as an inspiration to forward-looking people in all countries.

In July 1979, the Central Committee of the Communist Party of the Soviet Union and the Council of Ministers decreed the basic elements of an improved system of planning and economic management, to be worked out in detail during 1979 and 1980 in time for the Eleventh Five-Year Plan period beginning in 1981.

The main features include:

– Improved planning methods, requiring improved scientific methods of setting planning goals, detailed advance working out of year-by-year plans within a five-year plan, improved methods of measurement and accounting, determination in advance of priority projects and concentration of efforts on them;

– A series of measures designed to speed up completion of construction projects, to end the difficulties described earlier in this chapter;

– Promoting the formation of industrial trusts (obyedineniye) as the main contracting and accounting units – as distinguished from separate factories – which would thereby become parts of trusts;

– Making contracted supplies and orders between enterprises – over long periods of time – the main basis for planning production and distribution of goods;

– Increasing the use of material incentives, clearly tieing them in with value added by production, with the quality of goods produced, with adherence to contracted delivery schedules, and with features designed to reduce labor turnover;

– Further increasing the proportion of consumers durable goods produced by industrial trusts. (*Pravda*, July 29, 1979.)

In essence, this represents a deepening and all-round improvement of the economic reform of 1966. It bas, however, the advantages of a management and planning cadre with a much higher level of scientific-technical education than 15 years earlier, with the availability of data processing equipment for more accurate computation of planning balances, and with the varied experiences, good and bad, of the Eightb through the Tenth Five-Year Plan periods.

Obviously much depends on how effectively this general decree is worked out in detail during the remainder of 1980. And much depends on the extent to which the workers and employees have confidence in the system, feel that it gives scope to their potential, and overcomes past shortcomings.

Chapter XII

FOREIGN TRADE

International trade is growing in importance to the Soviet economy. Its value increased from 2.9 billion rubles in 1950 to 10.1 billion in 1960, 22.1 billion in 1970 and 63.4 billion in 1976. Even allowing for the rapid increase in prices during the 1970s, the recent rate of expansion is impressive. The physical volume of Soviet foreign trade increased 57 percent between 1970 and 1975, considerably exceeding the increase in domestic production. (*Vneshnaya Torgovlya SSSR v 1975 g.*, pp. 6,15; *Moscow Narodny Bank Bulletin*, April 5, 1978, p. 15.)

True, the proportion of foreign trade in the Soviet economy is less than that of many other countries. That's because it is the largest country in the world geographically, and can be self-sufficient in a wide range of products. Also, for interior areas, foreign trade requires substantial additional transportation costs.

Even so, its volume is still significantly restricted by political factors, although much less so than in the past. Before World War II the Soviet Union, as the only socialist country, was subject to far-reaching economic warfare imposed by capitalist governments, including embargoes, trade discrimination, travel restrictions, and lack of diplomatic recognition.

The world's capitalists hated and feared the USSR and expected to destroy it. Eventually, economic pressures impelled them to make particular trade deals with the Soviet Union, but they avoided long-term large-scale commitments. After World War II, the U.S. and most other capitalist countries resumed the economic warfare full force, during the cold war period. But a grouping of socialist countries emerged, with which the Soviet Union could trade freely.

True, initially the potential was limited because of the vast wartime destruction and the disruption of customary economic ties in these countries. For the most part, the trade was one-sided, consisting of emergency reconstruction aid by the Soviet Union, which simultaneously had to build its own devastated farms, industries and cities. But by 1950, most essential reconstruction activities were completed, and trade among the European socialist countries broadened and expanded rapidly.

The victory of the Chinese revolution opened up a potentially much larger collaborator with the Soviet Union. By 1959, in fact, China was the Soviet Union's largest trading partner, while the USSR accounted for the bulk of China's foreign trade. China's break in relations in the 1960s was a severe blow. If China had adhered to the path of cooperation, both countries would be stronger economically today than they are. Undoubtedly the damage done to China, which instigated and persisted in the break despite repeated overtures from the USSR, was much greater.

The aid provided by the Soviet Union to China was enormous by any standards, and especially in relation to its still war-depleted capacity.

The Soviet Union dealt with these tasks with outstanding success, but the costs were considerable to the Soviet people, whose living standards increased relatively slowly for the first 10-15 years after World War II. This was due partly to the assistance it was necessary to give to other socialist countries, and partly to the burdens of cold war military requirements.

Practically the entire industrial base of the less developed European socialist countries, China, and the Democratic People's Republic of Korea (North Korea–DPRK) was built with the large-scale assistance of the Soviet Union. And it supplied most requirements of basic raw materials to feed the new industries. Since 1960, the USSR, aided by the now well-developed East European socialist countries, has provided help to Cuba on a comparable scale, and similar assistance is flowing to Vietnam, Laos, and newly liberated African countries taking a socialist path.

By the end of 1975, the USSR had contracted to assist other countries to construct plants with capacities of 57.3 million kilowatts of electricity, 41.6 million tons of steel, 57.6 million tons of oil, 49.5 million tons of coal, 15.4 mil-

lion tons of cement, 2,4 million tons of fertilizer, etc. (*Narodnoye Khozaistvo SSSR, 1975*, pp. 759-760).

By now, the relations among the socialist countries are, for the most part, no longer one-sided in the sense indicated by these figures. There is substantial mutual assistance for the faster advance of all. Western propaganda strives to undermine the political impact of this relationship. But by and large it has contributed to a cohesion and friendship among the peoples of the socialist countries unmatched in the international relations of capitalism or earlier social systems.

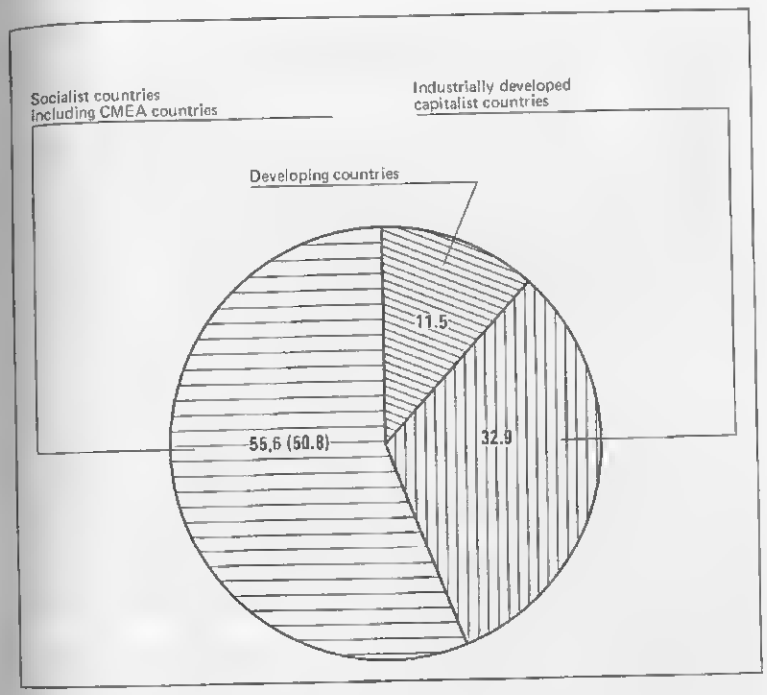
THE CMEA

Looking across the Moscow River from the Ukraina Hotel one sees a tall, modern building with two wings – the headquarters of the Council of Mutual Economic Assistance (CMEA, or Comecon).

In 1977, 36 billion rubles, or 57 percent of all Soviet foreign trade, was with other socialist countries; and of that, 33 billion rubles was with the then other members of CMEA – the GDR, Poland, Bulgaria, Czechoslovakia, Hungary, Cuba, Romania, and Mongolia. (*Source*: *Moscow Narodny Bank Bulletin*, April 5, 1978.)

Considering that the combined population of these countries, other than the Soviet Union, is only 120 million, this represents a quite intensive development of international trade. Some of the smaller CMEA countries depend very heavily on foreign trade: e.g., Hungary exports and imports up to 50 percent of its national production. Founded in 1949, the CMEA originally included only European socialist countries. Mongolia and Cuba joined later, and in 1978 Vietnam joined. Laos, the DPRK, and Angola have observer status, and probably some or all of them will be admitted to full membership in the not-too-distant future. Yugoslavia is a sort of half-member, participating in the work of some of the committees. Finland, Iraq, and Mexico have special working agreements with CMEA.

At first CMEA activity was limited mainly to a network of bilateral annual trade agreements, with deliveries in each direction specified so as to balance imports and exports between each set of partners. Gradually, the content of the relationships deepened. Now it serves as an instrument for



Proportions of Groups of Countries in Soviet Foreign Trade in 1976 (Per Cent)

the all-round integration of the economies of the socialist countries.

Trade arrangements are set for five-year periods, corresponding to and coordinated with the five-year plans of the individual countries. Through two CMEA banks, short-term and long-term credits are available, so accounts can be balanced multilaterally. That is, if country A buys more from country B than it sells country B, it can make up the difference by selling more to country C than it buys from country C.

In drawing up its five-year plans each country takes into account its responsibilities to its CMEA partners, so that, to an increasing extent, the economies of the member countries are *integrated*. There's a common currency of account, the "transferable ruble", which is equal in value to, but

not identical with, the Soviet ruble. It operates as a convertible currency within the CMEA countries, and to a limited extent it is used in trade with some non-member developing countries.

There's a network of specialization agreements, under which different member countries specialize in the production of specified items – for example, types of machine tools, in sufficient volume for the entire group of countries. The saving in efficiency is obvious. Perhaps more important still are cooperation agreements involving, in effect, subcontracting of parts among member countries for ultimate assembly in a big plant in one of the countries.

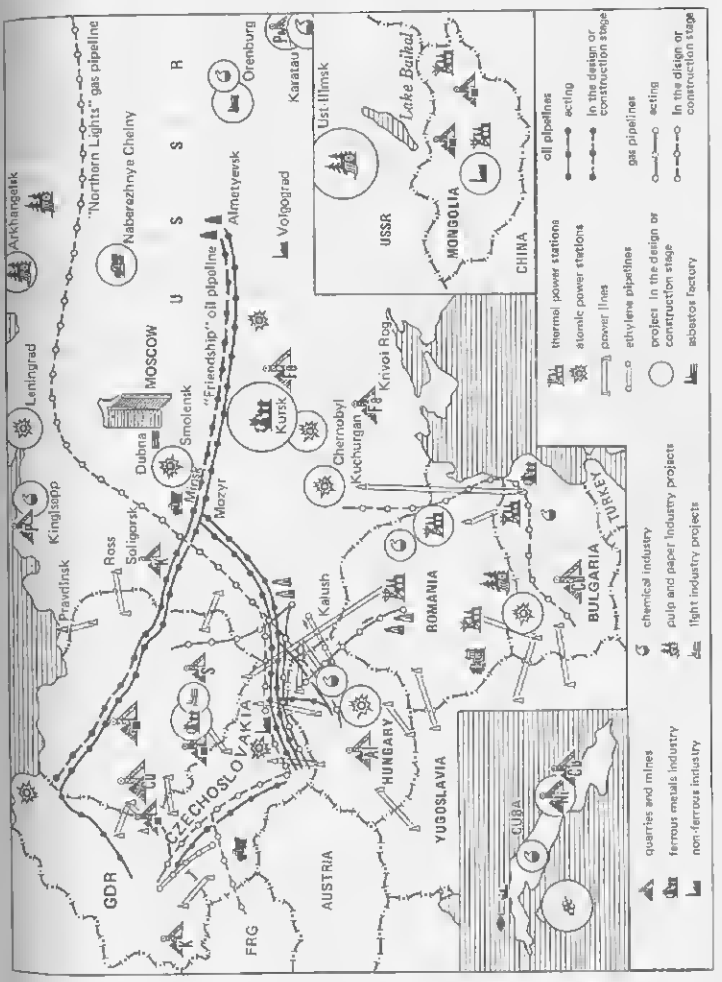
And now, joint investments, sometimes running into billions of rubles, are helping the socialist countries to cope with rapidly increasing demands for energy and for raw materials generally. Thus, the European member countries are each participating in financing and constructing, on Soviet territory, the gas pipeline from Orenburg in the Urals to the western border of the USSR. The smaller socialist countries will get urgently needed natural gas. The Soviet Union is spared a large part of the capital cost for moving the gas.

Czechoslovakia and the GDR contribute to the development of copper production in Poland, while these three countries contribute to construction of a pulp mill in Romania. Several of the member countries are helping to build nickel and cadmium processing plants in Cuba. Repayment will be in metal.

It's important to stress that there is nothing in common between these arrangements and the investments by multinational corporations in foreign countries.

The multinational corporation, normally, is the sole owner or controlling shareholder in the property located in another country, and its prime objective is financial profit. Within the CMEA, effective control is in the hands of the country where the enterprise is located, and the objective is the industrial development and procurement of needed supplies by the members, in proportion to their contribution to the project.

Multinationals notoriously ignore the long-term needs of countries where they operate, while the joint CMEA projects are based on the long-term plans of the participants and help effect their realization.



Main Projects of CMEA Countries.

Expediting the scientific-technological revolution is the main line of economic progress and growth in the world today. The scientific-technological cooperation among the CMEA countries may prove to be their most important activity in the long run. Some thirty centers have been set up to coordinate activities of research institutes in different fields, in some cases related to 10-20 year joint development plans.

Some details of this are discussed in the relevant chapters. It's widely believed, and probably true, that the Soviet Union is second to none in basic scientific research and discoveries, but lags in converting them into economically effective technology, in comparison with the United States and some other capitalist countries. CMEA cooperation is narrowing that gap.

A U.S. research group compared manufacturing technology in the United States, Japan, Norway, the GDR and the FRG. They found that the GDR had the "most sophisticated technology", which "has surpassed that of the United States" and the other countries studied. The program director, Charles H. Kinzey, noted that GDR's "marketing policies" concentrate on supplying the other socialist countries. (*American Metal Market, Metalworking News*, April 17, 1978.).

In fact, the sale of as much as 80 percent of the GDR's export of industrial equipment to other socialist countries, and the ready transfer to them of sophisticated know-how, tends to help them raise their technological level.

There is an extremely important difference in organizational principles between the CMEA and the international economic and financial organizations of the capitalist countries. Such organizations as the World Bank, the International Monetary Fund and the Common Market (EEC) have weighted voting systems, based on economic or financial strength. The voting systems of the IMF and the World Bank, for example, are such as to give the United States a virtual veto power, while leaving small states with no significant voice whatsoever.

In socialist countries' economic organizations, on the other hand, each member has one vote, and policy decisions have to be unanimous. In joint projects, participation is optional for each member. So there can be no question of a single country, or small clique of two or three countries, dictating to the others or exercising a veto power over the activities of the CMEA as a whole. This is in marked contrast to the situation in the World Bank and International Monetary Fund, where U.S. vetoes of loans to countries

with progressive governments have been notorious.

During the 1960s the requirement for unanimity held up progress toward further integration of the CMEA countries in view of the stress on independent development and on the establishment of equivalent relations with capitalist and socialist countries, by some members. That was true of Romania, and during the brief Dubcek regime, of Czechoslovakia. However, during the 1970s, the course to economic integration became decisive among all the members. This was confirmed in a document adopted at the 1971 CMEA Council Session held, significantly enough, in Bucharest, Romania. It has a long title: *Comprehensive Program for the Further Extension and Improvement of Cooperation and the Development of Socialist Economic Integration by the CMEA Member Countries.* (Progress Publishers, Moscow, 1971.)

It's a long document – the English translation is a 99-page pamphlet. But I believe that it is the most far-reaching and effective international economic agreement in history.

The basic aims set forth in this remarkable document include:

– Faster economic growth, with special emphasis on achievement of the highest scientific and technological level.

– Ample provision, for the foreseeable future, of the national economic requirements of the member countries for fuel, power and raw materials, modern equipment, farm food and other goods, mainly through the rational development and utilization of the CMEA members' resources.

– A rise in the material and cultural levels of the peoples – that is, in living standards.

– *Drawing together and equalizing levels of economic development.*

– Strengthening and enlarging the socialist world market.

– Achieving victory in economic competition with capitalism.

– Strengthening the defenses of the socialist countries.

The underlined point may be the most significant of all, in a profound social sense. The equalization process, the document says, "is an objective historical process in the development of the socialist world system" which derives from "the socialist nature of the relations of production ... and the development between them of political, economic, scientific and technological cooperation and mutual assistance."

It goes on: "The fulfilment of the key task of socialist and communist construction, that of attaining a higher social labor productivity in the socialist countries than in the capitalist countries, is organically combined with the gradual drawing closer and evening out of the economic development levels of the CMEA member countries."

The task of equalization "becomes particularly pressing in view of the demands made by the scientific and technological revolution", as by those of further deepening and perfecting economic integration.

"*This makes the CMEA member countries, both those highly developed and those less developed in industrial respects, objectively interested in the gradual drawing closer and evening out of their economic development levels.*"

That the process of equalization has already gone far is attested by actual developments among long-time CMEA members and by the virtual equalization of economic status among the Union republics of the USSR. Among the European member countries of the CMEA, none can be regarded any longer as underdeveloped. The difference in relative level between, say, Czechoslovakia and Bulgaria is much less than 30 years ago.

The contrast between socialism and capitalism in this respect is stark. Reports of the United Nations show a widening gap between developed and developing capitalist countries. And in practice the governments of the United States, Britain, etc., resist attempts of developing countries to reduce the inequality in terms of trade, etc., through realizing a "New Economic Order" in international relations, the principles of which were worked out by the developing countries, supported by the socialist countries, and adopted by the United Nations as its basic economic policy.

That is why, to me, the most important point in this section is the proposition that socialist equalization benefits all – those better off to begin with as well as those starting from a much lower level.

It is a profound idea.

Under capitalism, actions taken, supposedly, to facilitate development in poorer countries are viewed as charitable "aid" and as a drain on the "rich" countries. Among socialist countries, on the other hand, the concept of "mutual aid" is always stressed and represents the fundamental reality.

For example, the USSR has rendered considerable assistance to Bulgaria, providing plant and know-how for industrial development. But the Soviet people were repaid in the short run by the rising flow of high quality Bulgarian fruits, wines, and other consumers goods; and in the long run also, by the major contribution that Bulgaria now makes in the coordinated development of the electronic, computer, and communications equipment industries of the CMEA.

The USSR's initial aid enabled Bulgaria to have a *faster* growth in living standards than the USSR. But in the long run, living standards in the USSR have risen faster than they would have otherwise, thanks to cooperation with Bulgaria.

I believe this kind of relationship is of great advantage to the socialist community in economic competition with capitalism, and that it will tend to change the emphasis in that competition from pitting one country against another – e.g. the USA vs. the USSR – to competition between the socialist and capitalist sectors of the world economy as a whole.

Along with the gradual equalization of economic development, there is likely to be a gradual equalization of political and social development. Thus most of the present members of CMEA may be expected to approach the stage of communism at about the same time. And, in the future, as that stage is approached, the economies of the CMEA countries will tend to evolve into a single integrated communist economy.

TRADE WITH INDUSTRIALIZED CAPITALIST COUNTRIES

Soviet trade with capitalist countries has fluctuated with the sharp shifts in the political climate. In the early years of the Soviet state, the capitalist blockade kept that trade at a very low level. But the blockade was gradually broken, and the trade reached a pre-World War II peak of 1.6 billion rubles in 1930, with Germany, Great Britain, and the United States, in that order, accounting for more than half the total. Thereafter, Soviet foreign trade was reduced because of the great economic crisis in the capitalist world, intensified political tensions with the fascist Axis powers, and the beginning of World War II.

Following a brief postwar surge, Soviet foreign trade with capitalist countries was slashed drastically by the nearly complete cold war embargo imposed by the United States,

and by governments then wholly dependent on the United States. The low point was in 1950, when Soviet trade with industrialized capitalist countries amounted to only 440 million rubles. It increased gradually to 2.8 billion rubles in 1965, 4.7 billion in 1970, and then really surged to 15.8 billion in 1975 as political detente became the main feature of East-West international relations. The 1977 total was 18.7 billion rubles. Of course, higher prices played a part in this rapid rise, but even so, the physical volume of trade with capitalist countries increased 84 percent, and Soviet imports from them 116 percent, between 1970 and 1975. The share of industrialized capitalist countries in Soviet foreign trade increased from 19 percent in 1965 to 30 percent in 1975-77. (*Vneshnaya Torgovlya SSSR 1918-1966*, pp. 8-9, 62-63; *Narodnoye Khozaistvo SSSR, 1975*, p.p. 754-775, *Moscow Narodny Bank Bulletin*, April 5, 1978, p. 15.)

I believe that if the remaining serious barriers to trade between the USSR and the capitalist countries were removed, the Soviet Union's share in the total would continue to increase, to the mutual benefit of both the socialist and capitalist countries. The growth of trade with the six largest capitalist trading partners of the Soviet Union is shown in the following table:

USSR Trade with Leading Industrialized Capitalist Countries 1950, 1965, and 1977
(millions of rubles)

Country	*1977*	*1965*	*1950*
FRG (West Germany)	2,967	248	0
Japan	2,298	326	4
Finland	2,174	408	55
Italy	1,881	225	34
France	1,724	202	6
United States	1,533	89	50
Great Britain	1,332	399	128

(*Sources:Vneshnaya Torgovlya SSSP 1918-1966*; *Moscow Narodny Bank Bulletin*, April, 5, 1978.)

Usually, the rapid expansion of Soviet trade with specific countries followed the conclusion of basic political agreements. For most of the two decades after World War II, Finland was the leading capitalist trading partner of the Soviet Union, despite its relatively small economic weight. This was primarily because it followed a policy of neutrality in the East-West conflict, including consistent friendly relations with the USSR as well as with Western countries.

In the late 1950s and early 1960s, as Western European countries and Japan gained in economic strength and reduced their dependence on the United States, they gradually reduced the restrictions on trade with the socialist countries.

By 1965 that trade was still small, but no longer insignificant.

In that year I attended the Leipzig Spring Fair and talked with businessmen and women from various West European countries. They seemed to be quite at home "behind the iron curtain", and considered that business no different from any other.

The contrast with the situation in the United States was sharp. There trade with socialist countries was still officially regarded as not respectable, if not downright subversive, and capitalists still risked imprisonment and loss of foreign trading rights for selling an extensive list of "forbidden" goods to socialist countries. Thus U.S. trade with the USSR was hardly any larger then 15 years earlier, if one adjusts for price increases.

After 1965, USSR trade with major capitalist countries "took off", first with one country, than with another. In the mid-1960s, Franco-Soviet relations were markedly improved by political agreements and French withdrawal from active participation in NATO. A succession of five-year agreements multiplying trade several times followed.

The West German-Soviet Peace Treaty of 1970 ended the extreme tension between those two countries. It was followed by a series of summit conferences and meetings of foreign ministers. This set the stage for the very largest Soviet deals with a capitalist country and for a five and a half times multiplication of Soviet-West German trade in the following seven years.

In the case of Japan, economic agreements with the major Japanese trading groups, approved by the Japanese Government, preceded decisive advances in political relations. There is as yet no Japanese-Soviet Peace Treaty, and Japanese capitalists are restraining the full development of trade with the Soviet Union. Meanwhile they are maneuvering to restore much of their prewar semi-colonial economic domination over China by taking advantage of the anti-Sovietism of the Chinese Government.

The low position of Britain stems from its discriminatory actions taken at the beginning of the 1970s. In 1974 Lon-

don moved to normalize relations, and since then Soviet-British trade has been on the uptrend.

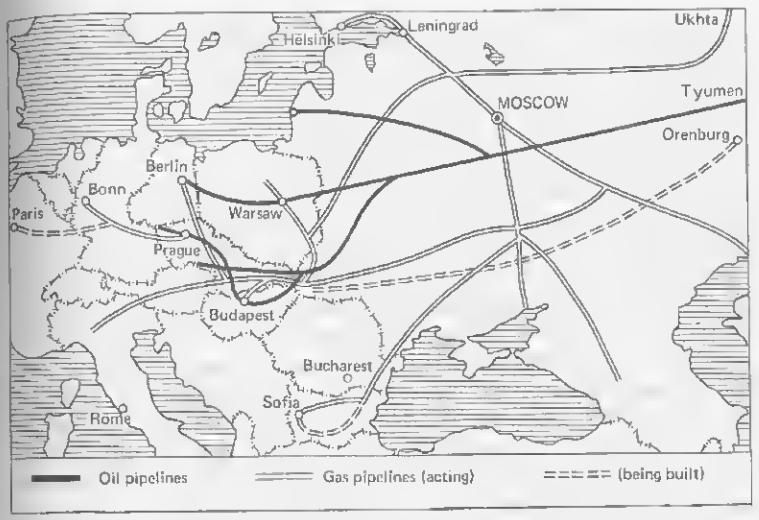
These countries all compete vigorously for export trade with the Soviet Union. They provide favorable credit terms and sponsor huge long-term deals involving their leading industrial companies and banks. But their trade with the USSR, and some other socialist countries, is still hampered; on the export side, by retention of some of the restrictions imposed, mainly under U.S. pressure, by COCOM – the coordinating committee of NATO countries and Japan; on the import side, by varying degrees of discrimination against goods from the USSR.

The fact that little Finland is still among the leaders in trade with the Soviet Union shows that the trade of all the major capitalist countries with the Soviet Union is still far below its potential.

West Germany has gone well beyond the other major capitalist countries in developing trade with the USSR, and even more conspicuously, with the CMEA countries as a group. In 1975 Soviet imports of machinery, transport equipment, etc., from the FRG exceeded a billion rubles, second only to its imports of these items from the GDR and more than double Soviet imports of such products from any other capitalist country. Total trade of West Germany with socialist countries, including the GDR. has reached an annual rate of around 40 billion marks, or $20 billion.

About 1,500 West German firms maintain trade contacts with the USSR. By now West German companies are participating with socialist countries in 350 major projects. In addition, Soviet foreign trading firms are cooperating with West German firms in installing power plants and other industrial projects in third countries. Altogether, it is estimated that 500,000 West German workers are employed on account of trade with socialist countries, a not insignificant factor in a period of stubborn unemployment. (*Ekonomicheskaya Gazeta*, No. 17, April 1976; *Statistische Beihefte su den Monatsberichten der Deutschen Bundesbank*, Frankfurt am Main, Reihe 4, May 1978, No. 5.)

Extremely important features of recent trends in Soviet trade with the West are the unprecedented size and duration of projects. The USSR has invited capitalist countries to supply capital equipment for its tremendous development projects, repayment to be part of the projects' output. The extent of



Pipelines Feeding Soviet Oil and Gas to Other Countries

these arrangements can be for periods running into decades, and the amounts involved can total billions of dollars.

One example is the development of Soviet natural gas. West European countries will supply credits as well as pipe, pumping equipment, etc. for this project and will be repaid with large quantities of natural gas until near the year 2000. Another example involves the construction of a half dozen huge ammonia-fertilizer complexes in the USSR, partly financed by international banking syndicates and equipped with turnkey factory complexes by Japanese and West European consortia, with long-term contracts for product repayment. It so happens that the Occidental Petroleum Corporation of the United States played a leading role in negotiating these arrangements and thus will participate substantially in purchasing part of the output in exchange for U.S. phosphates. But, because the United States bars normal credit terms and import privileges, American companies were not able to win any of the major plant installation contracts, and in 1979 other U.S. companies were trying to curb the Occidental deal by obtaining government restrictions on imports of Soviet ammonia.

In other contracts, Japan is cooperating with the Soviet Union in Siberian lumber development, port construction, and coal mining. The Fiat-Soviet contract for the Volga automobile factory, and the West German-Soviet collaboration in the multibillion dollar Kursk Magnetic Anomoly metallurgical development, are other examples.

Projects of this type have special advantages. They provide stable business over long periods of time, helping to moderate cyclical ups and downs in Western countries. They help the USSR (and other socialist countries with similar projects) to speed their economic growth and to raise their living standards. They help Western countries to obtain assured supplies of energy materials and other commodities for which traditional sources are less certain than formerly. The balanced, compensatory character of the deals eliminates the danger of financial difficulties, while insulating the Soviet Union from hardships resulting from the vagaries of Western markets for its goods.

Politically, these projects involve increased relations between people of East and West, building an atmosphere of cooperation that contributes to a lasting peace.

TRADE WITH DEVELOPING COUNTRIES

Soviet trade with developing countries amounted to 8.3 billion rubles, or 13 percent of the total, in 1977. India, Iran, and Iraq bordering on or close to the southern borders of the Soviet Union, are the leading trading partners in this category.

Soviet trade with developing countries follows a different pattern from that of the Western industrialized countries: the USSR has not set up ownership of enterprises there; there are no Soviet multinationals with "direct investments". The USSR does specialize in helping these countries build basic industrial enterprises, in educating engineers and other professionals, and in training skilled workers to take over operation of these enterprises after Soviet specialists help install them and start their operations. These projects are owned by the governments of the countries in question, and they contribute to a dominant state sector in industry. This reduces the instability associated with private capitalist ownership, and makes easier the transition to socialism if political conditions for that ripen. And the Soviet Union buys not

only raw materials, but wherever possible manufactured goods from the new industries of these countries.

The pattern of Soviet economic ties fits in with the demands of the developing countries for a New Economic Order, a source of conflict with industrialized capitalist countries and their multinational corporations. This accounts, in part, for the tendency of socialist and developing countries to be aligned in United Nations debates on economic policy, and increases the support for socialism among the peoples of these countries.

By the end of 1975 the Soviet Union was in the process of constructing or had completed in developing countries enterprises with a capacity of 10.8 million kilowatts of electricity and with annual capacities of 15.8 million tons of pig iron, 17.7 million tons of steel, 19.1 million tons of oil, 20.8 million tons of coal and many other basic industry products. In India, Egypt and a number of other countries, the Soviet Union is responsible for the decisive portion of the basic industries established since independence or since modernization began in the post World War II period.

Moreover, the pace of this assistance has increased. This kind of assistance is quite different from the grant aid provided by the United States to certain developing countries, which consists mainly of funding the military expenditures of client governments, and the provision at low cost of surplus foodstuffs to developing countries with acute food shortages and capitalist social systems.

The latter type of assistance provides short-time relief, but may actually hamper the lasting solution of problems, as it is combined with efforts to prevent basic social reform, a necessary condition for curing the conditions which lead to hunger.

Twenty years ago, Clarence B. Randall, and American steel magnate who had gone on government missions to developing and socialist countries, wrote a book on *The Communist Challenge to American Business.*

A large part of the "challenge" he feared was in the superior character of Soviet relations with developing countries. Acknowledging the impact of the Sviet-aided development projects, Randall wrote:

"Their terms are so enticing that it takes a resolute government indeed to resists a loan when hard pressed to finance a budget for a nation that has suddenly become

aware of the modern world and wants everything at once... Two and one half percent is the usual rate [of interest – *V.P.*], plus a moratorium on repayment until the project for which the money is to be spent has been completed."

Technicians sent in to supervise projects stay scrupulously out of local politics, he writes, but "you may be sure that Soviet Russia would never send a technician to another country until he was fluent in the language".

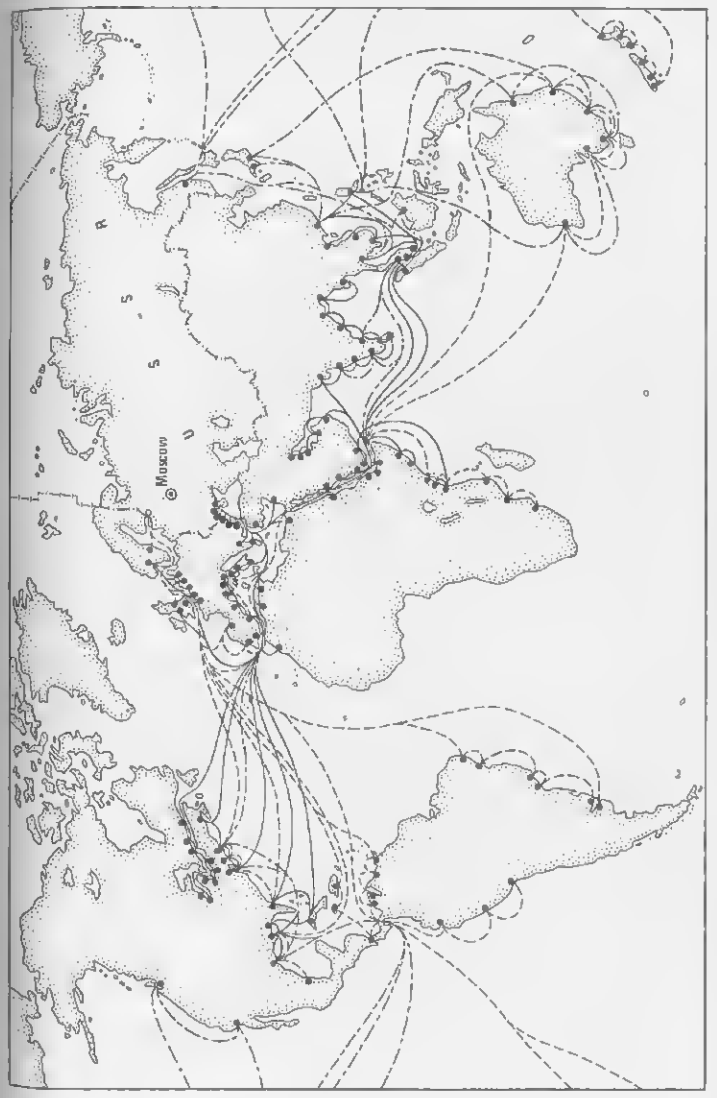
In addition, the state trading monopoly enables the Soviet government to supply developing countries with the goods they need, and to buy those they want to sell.

Furthermore, said Randall, the socialist system also gains in the developing countries from the experiences of students trained in the USSR, in contrast to the situation in the United States where too often the student is "made to suffer in his pride because of his race, his color, his religion or his customs".

Randall urged the U.S. to start matching the Soviet performance, in order to keep developing countries within the capitalist orbit, and to preserve the monopoly of their raw materials. (Clarence B. Randall, *The Communist Challenge to American Business*, Boston, 1959, pp. 40, 115, 135.)

Indeed, in response to the challenge, the United States and its NATO allies have made adjustments in their relations with developing countries. Through the World Bank and related international agencies, they have loaned tens of billions of dollars for economic projects. In contrast to the Soviet projects, these are mainly for "infrastructure" – that is, hydropower and irrigation dams, port facilities and roads, rather than for heavy industry installations. Certainly they are important, but often primarily for the extraction of minerals and shipment of consumers goods to the countries, in a neo-colonial pattern, more than for rounded industrial development.

U.S. credits for industry to developing countries are usually to private companies, often with U.S. corporate participation. State enterprises are avoided. The political object is to complement U.S. political and military assistance to capitalist elements in these countries. The U.S. also has refused to moderate its import policies to accept substantial amounts of manufactured goods from developing countries, except when they are produced by runaway shops owned by U.S.-based multinationals.



International Cargo Lines of Three Main Soviet Shipping Companies

Since the enactment of Civil Rights laws in the United States, and the increased mingling of races among the younger generation, foreign students in the United States are subjected to less discrimination than formerly. Meanwhile, every effort is made to spread tales in developing countries of discrimination against Africans, etc., in the Soviet Union, tales without real foundation.

The volume of trade of the Soviet Union and other socialist countries with the developing countries continues to grow, but remains small in comparison with the trade between the Western powers and these nations. There was a rather sharp increase in Soviet exports to developing countries in 1977, and during the past decade the USSR has established a basic framework of economic relations with many countries with which it formerly had little or no trade – often because of its purposeful exclusion by governments dominated by one or another Western power.

The statistics cited refer only to developing countries that are not regarded as being definitely socialist oriented. Soviet trade with developing socialist countries – Cuba, Mongolia, the DPRK, Vietnam and Laos – came to 4.9 billion rubles in 1977. Adding that to the trade with other developing countries brings the total to 13.2 billion rubles, or 21 percent of the total foreign trade of the Soviet Union.

Soviet trade with Cuba alone, 3.5 billion rubles in 1977, exceeds that of the Soviet Union with any capitalist country, and by a wide margin exceeds all of Cuba's trade with all countries prior to the Cuban revolution.

As more and more developing countries take the socialist path, their trade with the Soviet Union is apt to multiply many times, and the total scope of Soviet trade with developing countries may expand more rapidly than with developed capitalist countries. At the same time, with the aid of the USSR and other developed socialist countries, within a relatively short period of time countries like Cuba, Mongolia, the DPRK, and Vietnam will themselves become highly developed industrially and agriculturally, adding to the economic strength and social development of the socialist world.

Chapter XIII

U.S.-USSR TRADE RELATIONS

For many years I have been following the course of U.S.-USSR trade relations. I have been distressed by the discriminatory U.S. legislation that has kept American-Soviet trade far below its potential and I have written many articles indicating the advantages of such arrangements: more jobs for U.S. workers, more business for U.S. firms suffering from lack of orders, faster industrialization of the Soviet Union which would, in turn, create even more markets for imported items, etc. As well, of course, as the improved environment of cooperation that would encourage detente and peaceful coexistence.

Thus the extent of economic relationships between the two countries was one of the important areas we wanted to investigate. At almost every enterprise we visited in the Soviet Union there was some evidence of U.S.-Soviet economic ties. Officials told us of contacts with American businessmen and we saw equipment made in or licensed by U.S. firms. The Soviet officials conveyed an impression of business-like, cooperative relations with U.S. executives and engineers. And we have found a like attitude among their American counterparts in the United States.

Yet U.S.-USSR trade is lagging, and, aside from grain, is only a fraction of Soviet-FRG trade, for example. Why? What is behind this? Where is U.S.-USSR trade going?

MANZHULO INTERVIEW

My interview with Deputy Foreign Trade Minister A. Manzhulo gave me a new insight into the views of the Soviet leadership on economic relations with the United States. The

meeting was at the end of June 1977, and Manzhulo, along with N. Patolichev, the Minister of Foreign Trade, had been in the United States a few weeks earlier on the occasion of the meetings of the U.S.-USSR Trade Commission and Trade and Economic Council.

The current stagnation in U.S.-Soviet trade results mainly from the discriminatory features of the Jackson-Vanek and Stevenson amendments to the Foreign Trade Act of 1975. This legislation imposed unscalable tariff barriers on many Soviet products and barred Export-Import Bank loans on Soviet purchases of U.S.-made capital goods.

Aside from grain shipments, which fluctuate with the size of the Soviet crop, Soviet imports of industrial goods from the U.S.—primarily machinery and equipment—continued to increase in 1975 and 1976, mainly on account of orders placed earlier, but turned downward in 1977. Manzhulo estimated that under the previous conditions, established by the 1972 Economic Agreements between the United States and the Soviet Union, trade between the two countries would have amounted to $2 billion a year, excluding grain, in the 1976-1980 period. But in the actual situation, new orders for U.S.-made machinery and equipment had virtually dried up. Shipments on old orders were down about 50 percent and would be close to zero by 1980, he said.

On the Soviet delegation's Washington visit, they had met with key Senators. They had met with the top cabinet ministers of the Carter Administration. Said Manzhulo:

"They are all serious men; they are all in favor of relations with the Soviet Union. They all said a political settlement was necessary. But ... they all said that before there could be any movement, the Soviet Union has to fulfill certain preconditions as to its own political life. Some were more vehement about it than others, but there were no exceptions from this refrain."

Of course, his reference was to the U.S. insistence that Soviet emigration policy be adjusted to certain standards, which were not specified, and be subject to continuous review by the U.S. Congress. Some Senators, including those prominent in getting the 1974-75 anti-Soviet amendments adopted, said that it was too bad the amendments had been passed. *But*, they would not lift a finger to repeal them until the USSR toed the line.

Patolichev's response was unequivocal: "The USSR never

imposes conditions on others, and will never tolerate interference in its internal affairs."

Manzhulo told me they had also met with heads of large corporations, and that all are in favor of trade relations: "We have good prospects for business cooperation. What is necessary is for the United States to take a more realistic position. You can do without us and we can do without you, but we can both benefit by cooperation." And it is clear—from my conversations with U.S. businessmen, from reading their speeches, from their arguments in Washington for removing the harriers against trade with the USSR, as well as from what Soviet executives told me about their relations with U.S. industrialists—that there is a gap between the viewpoint of the businessmen and the viewpoint of the Administration and the Congressional leadership.

How to explain this gap? I'll analyze this question a bit later. But for now, note that as a result of the gap, U.S. businessmen are doing a significant business with the USSR through their multinational positions outside the United States.

Some years ago a U.S. State Department official told me that about three-fourths of U.S. corporate sales to the Soviet Union were made from foreign subsidiaries, rather than from U.S. factories. I asked Manzhulo if this was still the case. He said that after the improvement in relation in 1972, this ratio declined. For a while the tendency was to buy directly from the United States. But now, he thought, it was probably back up to the 75 percent ratio again:

"It's necessary to buy from foreign subsidiaries because of U.S. licensing restrictions as well as credit and import restrictions. U.S. licensing restrictions have become more severe, even though this was not required hy the Trade Act. We are denied Export-Import Bank credits, but can get credits in the U.K., Italy, France, etc. So U.S. suhsidiaries give us credits through those countries. Also a large British company, such as ICI (the British computer company), may sell us equipment they make using U.S. process licenses."

In virtually every Soviet factory we visited we saw or were told of use of equipment from U.S. corporations. And almost always it has been bought from a European subsidiary or, if made in the United States, indirectly through

an intermediary West European buyer, or from a West European firm making the product under U.S. license.

As a result, U.S. multinationals lose part, but not all, of the business with the Soviet Union. The Soviet Union can get the American items it really needs, but often pays a premium price by going through an intermediary. The biggest losers, however, are those unemployed U.S. workers who would have jobs if their employers were able to supply the equipment from their U.S.-based factories, instead of going roundabout in order to bypass the anti-Soviet legislation. The company may make as much, or nearly as much, profit selling from a West European subsidiary. But the difference in employment to U.S. workers is total.

Charles Elston of General Electric gave one example. General Electric has a big contract to supply compressor stations for the Soviet gas pipelines. At the start, when they were operating under Export-Import Bank credit arrangements, these were made in the United States. But now G.E. has had to switch to their owned and licensed West European factories, financed by West European governments and private banks.

At the time of out Soviet visit, the U.S. Government had just made a fresh effort to establish a credit cartel directed against the socialist and developing countries. I asked about it, Manzhulo replied:

"Such an agreement has already been reported, providing for a minimum interest rate–the same as that of the Export-Import Bank, which has raised its rate to 8 percent. We have been getting credits at 7 percent or less. But this is artificial. It depends on the economic situation. The Export-Import Bank will have to change its rate if the market changes.

"What is significant here is the hostile attitude toward us. It is not in the spirit of Helsinki, it is not consistent with detente and friendship. This, and the general negative attitude toward trade, goes back to the cold war.

"I think it is a test of strength by the new Administration, which will have to become more realistic. Carter is advised by anti-Sovieteers, like Brzezinski. But I am optimistic and hope relations will improve to our mutual benefit. I am optimistic because we think that the only way relations can develop is on a fair and equal basis."

"What about the North Star project," I asked. "Is it still possible from the Soviet viewpoint?" I was referring to the deal projected in the early 1970s between the USSR and three large U.S. corporations for the long-term, large-scale sale of West Siberian natural gas to the United States. It would have been by far the largest-ever deal between the two countries. The gas would have been piped to Murmansk, liquefied there, and shipped in LNG tankers to the United States. Projected advantages to the United States included a reliable large-scale supply of gas at a fraction of the price which the United States is now paying for imported natural gas: a huge amount of business and tens of thousands of jobs for workers manufacturing pumping equipment, gas processing stations, a dozen LNG tankers, and thousands of miles of pipeline pipe.

But the anti-Sovieteers went after the project with especial fury. The Nixon Administration blew hot and cold; the Ford Administration definitely cold; the *New York Times* inveighed against it; and the Pentagon sailed in with the nonsense argument about not wanting to be dependent on Soviet supplies. The barring of Export-Import Bank credits finally killed the deal. And Manzhulo indicated that it cannot be revived:

"Under present conditions it is unrealizable. Time has been lost, and now we have built lines to supply the gas to France, the FRG, Italy, Austria, and East European socialist countries. We have concluded an agreement with Iran. We get gas from Iran and supply Europe from our own resources. We now have contracts to the year 2000. Our resources balance so we are not interested any more. Also, there has to be trust between partners. No one is going to invest billions when a Jackson can introduce an amendment to kill it all."

But then he went on to make it clear that there are plenty of opportunities remaining for the United States to benefit by participating in Siberian development. He mentioned the South Yakutian coal deal with Japan. Japan granted a credit for a billion dollars for equipment to open up this vast open-cut coal mine and to transport it. A spur of the famous BAM railroad has already been built northward to Berkakit, where the coal area is centered.

The BAM railroad (Baikal-Amur) will open up many interesting places, with a very great potential for deals with the United States, continued Manzhulo. He mentioned

the Udokan copper deposits. For years the USSR and Japan negotiated, but the Japanese were never quite ready to commit themselves. Now the United States, Canada, and Britain are involved in discussions about Udokan copper. The Rio Tinto company is playing a leading part in these discussions. The project has been postponed because there were no transport facilities north of Lake Baikal. But with the BAM railroad it will become feasible, because the railroad will come close to the copper deposit.

He emphasized that the Soviets would be particularly desirous of cooperation with those U.S. companies that have cooperated with the USSR in the past and that are trying to find credits for U.S.-USSR deals under existing conditions. I asked: "How much better is U.S. equipment than that of its capitalist competitors?"

He answered: "There was a time when U.S. technology was tops. No more, that time is past. Now, in many areas – especially in engineering and machine building, – the English, the French, the West Germans, the Japanese, are equal or better. In the USSR also we have good technological developments. We have sold 20 licenses for technological equipment to the United States. Now each country has some things in which it excels. The U.S. probably has more than any other, but the FRG and Japan, especially, are approaching it more and more. Those in the United States who say 'do not sell technology to the USSR' are futile – there is *nothing* we cannot get somewhere else or do ourselves.

"We were denied the Control Data Cyber-76 computer on the grounds of possible military use. We wanted it for our meteorological service, for our international weather service. So we will buy it elsewhere. It's a wrong idea that the USSR will suffer if it can't get some piece of equipment."

I asked whether the share of Soviet trade with the capitalist countries would be constant, increase, or decrease. Manzhulo answered that recently Patolichev had met with a delegation headed by former Treasury Undersecretary Robert Roosa, now a partner in Brown Brothers Harriman and Co., and that they had asked the same question. He went on:

"All of our trade is increasing, including with capitalist countries. During the next five years we will buy $100 billion of machinery and equipment, a lot of it from the West. We will increase purchases from socialist and from capitalist countries, the proportions depending on changing circumstances. And that also applies to the share of that $100 billion that will go to the United States."

I ended the conversation by posing a conundrum:

"David Rockefeller says he is a friend of trade with the USSR. Brzezinski is a close associate of David Rockefeller. He opposes trade and detente with the Soviet Union. Which is the real Rockefeller position?"

Manzhulo smiled and ducked that one.

COURSE OF U.S.-SOVIET TRADE RELATIONS

Historically, embargoes have been used usually as a weapon of combat, auxiliary to armed conflict. The embargo of capitalist countries against the new Soviet Republic started that way, accompanying their military intervention which aimed to destroy it. Attempts were made to continue the boycott after the fighting ended. But, as Lenin predicted, the capitalists' need for trade gradually broke down the embargo.

But thereafter, even at best, various handicaps were put up against normal trade with the Soviet Union. The United States was the last of the major powers to establish diplomatic relations with the Soviet government (1933). Great hopes were expressed for future trade potentials by officials of both countries, but War Department objections barred the Export-Import Bank from granting loans to the USSR, although President F. D. Roosevelt had established the Bank with that specific purpose in mind.

The Soviet Union enjoyed more or less normal trade relations with the United States for only two years, from 1937-1939, under a trade agreement providing most-favored-nation treatment and non-interference in one another's internal affairs.

However, soon restrictions were placed on U.S. trade with the Soviet Union. As World War II loomed, the U.S. embargoed exports of machine tools and other products the USSR wanted to prepare for the expected onslaught by Hitler Germany and Japan. Even as a wartime ally, the United States was much more restrictive in supplying the USSR than in supplying Britain or its other allies. Particular efforts were made to avoid supplying any machinery that might be used for peaceful reconstruction after the war.

The day the war in Europe ended, the United States cut

off shipments to the USSR and demanded the return of goods not used up. Within another two years, with the Truman Doctrine, the United States declared "cold war" on the USSR and the new socialist countries. A ring of hostile bases was erected around them, and a virtually complete economic embargo was imposed.

In 1949 President Truman abrogated the trade agreement with the USSR, resulting in the imposition of discriminatory, often impassable, tariff barriers against Soviet goods. Imports of particular types of Soviet products were barred outright. A severe export licensing procedure was established, and U.S. exports to the USSR declined to an all-time low of $19,000 in 1953. Soviet vessels were barred from U.S. ports.

The U.S. Government demanded of all other capitalist countries that they participate in economic warfare against the socialist countries. Dependent on the United States for military, political, and economic support, most of them complied. United States representatives monitored the West European ports to prevent shipments to the Soviet Union. American capitalists who attempted to evade the embargo were imprisoned. An international organ to prevent trade with the socialist countries – COCOM (for Coordinating Committee) consisting of the NATO countries and Japan – met secretly and, using secret lists of goods, carried out the embargo.

But gradually the tide turned. Over the years, West European and other capitalist governments reduced their compliance with the U.S. embargo rules. By the 1970s large-scale trade between capitalist and socialist countries was a reality, and by now the value of that trade is approaching $100 billion a year. The U.S. ability to restrict other countries' trade with socialist countries has dwindled to some marginal matters.

As the U.S. international trade position worsened, and United States companies saw their rivals in other countries getting all the business with the socialist states, they began to pressure Washington for relaxation of the restrictions. Gradually, the most extreme restrictions were eased. In 1970 West Germany, which had been the most "reliable" NATO partner of the United States, normalized relations with the USSR, and trade between the two expanded rapidly. In the following year the worsening deficit in the U.S. balance of payments forced the first postwar devaluation of the dollar

and sounded the death-knell of the monetary structure created at the end of World War II. Many Americans felt the country could no longer afford the luxury of neglecting a market that offered much promise for improving the balance of payments and restoring the declining position of the United States in world export markets.

Thus, the pressures inducing the Nixon Administration to normalize relations with the USSR, to accept the previously reviled concept of "peaceful coexistence", included powerful incentives for economic detente. Washington began to issue licenses for large quantities of machinery, and for technological know-how contracts.

In 1972, following the U.S.-USSR political agreements, a series of economic agreements were concluded. These provided for Export-Import Bank credits on major capital goods sales, for most-favored-nation treatment on imports from the Soviet Union, for settlement of Soviet Lend-Lease debts to the United States, and for the reopening of U.S. ports to Soviet vessels. These accords promised a new era of increasing cooperation, military and political detente, and an open door for large-scale economic relations. They had broad public support. But the opponents of detente made trade their first target. With little resistance by the weakened Administration in power, Congressional and military cold warriors, backed by major newspapers, launched a fierce political attack on the Soviet Union, focusing their fire on economic relations.

In the last days of 1974 Congress passed legislation that prevented Export-Import Bank credits to the USSR and barred the granting of normal tariff treatment to imports from the Soviet Union and most other socialist countries. Under the terms of the 1972 agreements, this led to the cancellation of the Soviet requirement to make substantial payments on account of wartime Lend-Lease shipments. Of the 1972 agreements, only the provision concerning shipping remains more or less intact, and that is currently under attack. Licensing of exports has been made more restrictive again.

With insulting hypocrisy, Congress offered to reconsider if the USSR would agree to subject its emigration policies to U.S. Congressional supervision. Trade with the GDR, Czechoslovakia, and Bulgaria is subjected to corresponding discrimination, with some other East European socialist countries to less severe discrimination. The United States continues, at this writing, to embargo all trade with Cuba, Viet-

nam, and North Korea.

The ultra-right top officials of the main trade union federation, the AFL-CIO, supported the anti-Soviet economic moves, in defiance of the interests of their members in industry. And the anti-Soviet sanctions were legislated without serious public opposition on the part of most of the capitalists who stood to lose business on account of it, although more and more of them have since called for an end to the discrimination.

MOTIVES FOR ECONOMIC WARFARE AGAINST THE SOVIET UNION

Most U.S. businessmen want trade with the Soviet Union, yet a big-business dominated government puts up often insuperable barriers to that trade. How can one explain such a contradiction? This is what seems reasonable to me:

An individual U.S. capitalist wants to do business where profit can be made. He is indifferent to the political complexion of the government of a foreign country, and is concerned only with its financial and contractual reliability. Having seen convincing evidence that large-scale business, yielding reasonable profits, can be had with the Soviet Union, and that the USSR is 100 percent reliable as a business partner, he is anxious to trade with that country.

But the government representatives of the country's capitalists have a different "strategic" conception. They consider that socialist governments pose a mortal threat to the U.S. social system, and they want to do everything possible to weaken socialist countries. In most other capitalist countries, the political leaders recognize that they are too weak to destroy the socialist countries, so the need of their capitalists for trade takes precedence. But the United States, with its enormous military and economic strength, considers it still possible to destroy the USSR militarily or through economic embargoes. The reactionary American rulers hang on to these beliefs, no matter how illusory they may be.

And capitalists, all too ready to challenge government measures that protect the health and safety of workers and consumers, and to fight for tax concessions, for anti-labor legislation, etc., are most reluctant to contest policies rationalized on grounds of "national security". This is especially true when the presumed threat to "national security" stems from

a country with a socialist society, to which they are opposed by virtue of being capitalists.

The dichotomy between practical and "strategic" interests sometimes appears in the attitude of the same individual or family. David Rockefeller, as Chairman of the Chase Manhattan Bank, set up an office in Moscow, helps arrange deals, and makes speeches favoring trade. But as the main sponsor of the Trilateral Commission, he endorses policy papers which take a negative view of any moves to normalize trade with the Soviet Union, and he launched on the national policy scene Brzezinski, a neo-fascist emigre from socialism. While his late politically prominent brother, Nelson Rockefeller, had a long history of vocal opposition to East-West trade and advocacy of hard-line policics generally.

Most frivolous of the reasons advanced for opposing trade with the Soviet Union is the Pentagon argument that the USSR might use equipment ostensibly purchased for civilian purposes to make advanced military equipment. There isn't that much interchangeability between civilian production setups and the special-purpose armament industries. The U.S. Defense Department is well aware that the USSR has always been able to provide the necessary equipment and production methods for items it needs for its security.

The Pentagon has carried its vetoes on this ground to ludicrous lengths. At one time, as I remember, it even had barred the sale of ladies' bras to the Soviet Union on the ground that the metal stays used in them could be used for military purposes. More recently General Motors was prevented from concluding a multi-hundred-million dollar contract for cooperating in designing and equipping the giant Kamaz truck factory. The excuse was that the trucks might be used by North Vietnam against South Vietnam. In 1977, two years after the North Vietnamese had won the war with extensive Soviet aid, we saw some of the first Kamaz trucks in operation in Western Siberia.

The Pentagon argument is designed to impress fools and naive people. More relevant is the Pentagon understanding of the interconnection between general industrial power and military might. The generals consider that anything that will hold up the growth of the Soviet economy will hamper its military preparedness and contribute to the Pentagon's persistent attempt to obtain a sufficient military superiority to dare launch a third world war.

But, at most, this concept is relevant only on the contrived, dishonest assumption that the Soviet Union plans to attack the Western powers; and on the assumption, derived from intense anti-Communist hatred, that the U.S. military can obtain superiority and launch a successful anti-Communist war of conquest. People with such assumptions are afflicted with the same criminally insane illusions and ambitions as was Hitler. And still, U.S. economic policy toward the Soviet Union is dominated, more than anything else, by such considerations of military confrontation. The McCarthyism of the 50s received a serious setback in U.S. domestic affairs, but it's very much alive in foreign policy.

Aside from military considerations, capitalist ideologists relate trade to their attempt to remain ahead of the Soviet Union in economic strength – as necessary to offset the growing attractiveness of socialism to workers.

As a result of the USSR's extremely rapid recovery from the devastation of World War II, and its stormy economic progress during the 1950s, the sensational successes of the Soviet Union in science and technology – notably in atomics and space exploration – brought panic fear to the leaders of U.S. big business groups. For the first time they took seriously the Soviet intention of overtaking the United States in economic power.

Lacking a reliable program for improving the economic situation in the United States, they concentrated on trying to injure the Soviet economy through various U.S. actions. Thus, the argument was made that the United States should increase military expenditure in order to force the Soviet Union to divert more resources for self-defense. Since the USSR's economy was considerably smaller than that of the United States, it was hoped that the USSR would have to divert a larger portion of its resources in order to match the U.S. military effort. These groups even expressed the hope that this pressure would so worsen Soviet living conditions as to stimulate internal unrest and, possibly, revolt.

Today similar reasoning is used to explain the embargo against Cuba and Vietnam. It is argued that by embargoing Cuba and maintaining a constant threat against it, "we" force the Soviet Union to spend hundreds of millions of dollars yearly to supply Cuba with economic necessities and defense materials. Similar conditions apply to Vietnam.

Another device is to differentiate among socialist countries

in the degree of economic discrimination, with the hope of creating splits among them. A recent news account tells that "U.S. officials have come out in favor of U.S. Government moves to grant most favored nation status and Export-Import Bank loans to Hungary, and explain:

"The State Department strongly supports this program for both Romania and Hungary as a means of weakening, to some extent, the economic ties between them and the Soviet Union." (*American Metal Market/Metalworking News*, April 17, 1978.)

Then there is the attempt to obtain political concessions fron the Soviet Union through the "carrot and stick" manipulation of trade relations. Thus efforts are made to "punish" the Soviet Union because of its support of the Government of Angola against attacks by South Africa and CIA-organized Angolan collaborators with South Africa. And there was the offer of economic concessions to the USSR on condition that it induce the Government of North Vietnam and the National Liberation Front of South Vietnam to yield to the puppet Thieu regime in South Vietnam.

In this connection, one cannot ignore the influence on U.S. politics of groups opposing trade with the Soviet Union for special political reasons. Examples are Zionist groups which very actively supported the Jackson-Vanek and Stevenson restrictions to "punish" the USSR for its support of the Arabs in the Middle East conflict; various emigre groups from socialist countries; and the far-right spectrum in U.S. politics, with the military-industrial complex closely associated with it, opposing anything that would interfere with the continuous expansion of armament orders.

Supplemental motives for economic discrimination against the Soviet Union are provided by particular domestic economic interests. Companies fearing competition from imports from the Soviet Union or other socialist countries campaign for laws and regulations protecting them from that competition, and for general anti-Soviet trade restrictions. In view of the prevalent anti-Soviet propaganda, they win campaigns that they could not hope to win against business competitors in other capitalist countries. A recent example was the torpedoing of a ready-to-sign economic agreement with Czechoslovakia, settling all outstanding issues. A glove manufacturer with a patently unreasonable claim against Czechoslovakia was used by Congress to block the draft agreement.

Anti-Sovietism was the main propaganda instrument by which East Coast fishing industry interests obtained adoption of a 200-mile limit, within which foreign fishing is rigorously restricted, although the law was actually directed against Japanese and other non-socialist fishing vessels as well as those of socialist countries.

Then there are companies that want to trade with the Soviet Union only within certain limits, for fear of undermining certain monopoly positions. For example, for many years some of the lesser computer companies actively sought Soviet business, while IBM restricted its sales offers to obsolete models. Perhaps this was motivated partly by fear that the USSR would become a serious rival in sales of computers on world markets. But the fact is that the challenge to IBM's predominant position has become serious, from an entirely different direction–from new U.S. companies, often run by former IBM employees, and from Japanese companies. More recently IBM itself has been hampered in a major proposed sale to the Soviet Union by U.S. export licensing restrictions.

This complex of motives reflects an utterly unprincipled, unremitting hostility toward the new social system, and especially toward its strongest practitioner. It's a beggar-thy-neighbor attitude which gives absolute priority to hurting the USSR, regardless of the negative impact on the people of the United States.

Thus everything goes. Breaches of contract and violations of agreements and treaties are "normal". Consider the seizure after World War II, at the last minute, of a steel mill for which the USSR had paid; or the retention, to this day, of the stolen state gold reserves of Czechoslovakia; or waiting 33 years to return, just recently, the crown jewels of Hungary. Then there was the device used to break the 1972 Economic Agreements: using the need for Congressional ratification to veto it. I say device because the Administration, instead of lobbying for passage of the required legislation, initiated and fueled anti-Soviet propaganda to ensure Congressional rejection of the document.

A NO-WIN POLICY

Can U.S. economic warfare inflict major damage on the USSR?

History shows that it cannot. World War II teaches important lessons relevant to this question. The economic advantage of Hitler Germany over the USSR, especially after the initial successes in 1941, was much greater than the economic advantage of the United States over the Soviet Union in the 1960s. And yet by 1943 the Soviet Union was outproducing Germany plus its occupied territories in production of war weapons.

The basic reason is the tremendous advantage a socialist planned economy has in being able to concentrate energies where most needed, to prevent diversions for special interests. In addition, there is the determination of the Soviet people *as a whole*, with no significant exceptions, to defend their social system and territory from attack or the threat of attack. The political cohesion of the Soviet people, stemming from the elimination of exploiting classes, surpasses that achieved by any previous social system. This is only strengthened by the ill-will, meanness, dishonesty, unreliability, and mortal hostility exhibited repeatedly toward their society by the very powerful reactionary and militarist forces in the United States.

At an earlier stage U.S. cold war strategists strove to prevent the USSR from obtaining commodities which they hoped would prove to be bottlenecks holding up progress in the Soviet economy. Today, in view of the unmatched Soviet capability for producing a wide range of raw materials, and its improved access to materials produced in the former colonial or near-colonial countries, this method has been largely abandoned.

The emphasis now is on attempting to deprive the Soviet Union of advanced technology. I think Manzhulo was correct when he said this will not work. Major improvements in technology, development of entirely new products, and computerization and automation of production, have been responsible for achieving the greatest jumps in labor productivity, and hence in overall economic power. U.S. government policy consistently attempts to maintain its technological advantages in those areas where they exist. The general principle is to refuse to sell the USSR equipment and process licenses for the most advanced installations, and to offer only items 5-15 years behind the "state of the art". Through the COCOM mechanism, Washington imposes similar restrictions with respect to trade with the USSR on all other

developed capitalist countries to the extent that they will accept them. Right-wing forces seek to intensify the restrictions on the sale of technological know-how.

Thus J. Fred Bucy, President of Texas Instruments, Inc., a leading producer of military electronics, headed a government advisory committee which submitted a report urging that availability of U.S. technological know-how to socialist countries be subjected to much closer scrutiny and be more strictly limited.

The argument is that the "lagging", "ailing", Soviet economy "desperately needs" U.S. know-how, technology, and advanced equipment to "pull it out of its slump". Of course, the description of the state of the Soviet economy is wildly off course. Despite attempts to back it up with reference to specific real problems of the Soviet economy, it amounts in its totality to a big propaganda lie, designed to create the illusion that the advocated policy can "soften up" the Soviet Union for the kill.

This position is based on a series of false premises:

1. It exaggerates and generalizes the advantages of the United States in technology. The Soviets argue that U.S. restrictions have stimulated them to accelerate scientific-technological research and development of products not accessible to them through foreign purchase. In some areas this forced draft program achieved spectacular results – of which the best known is in the field of atomic energy.

Aside from that, there are plenty of areas where the Soviet Union is ahead of, or pioneered in advance of, the United States. Prominent examples are jet aircraft, space exploration, missile technology, breeder reactors, various areas of metallurgy, in addition to specific advances in almost all fields. In one of the newest major scientific-industrial areas, laser technology, the two countries appear to be on a par. The Soviets point out that they have sold more process licenses to U.S. companies than they have bought here.

Of course, there remain many areas where U.S. technology is apparently superior to that of the Soviet Union, including computers, electronics, petrochemicals, and quality control systems. But the margins are, in general, declining, and the total picture is far from that drawn by J. Fred Bucy, Senator Henry Jackson, and similar incorrigible anti-Sovieteers.

2. It banks on a declining, and in some ways fast

vanishing, ability of the United States to prevent other capitalist countries from selling the Soviet Union equivalent or identical equipment and technology. At the depths of the cold war it was one thing. Now that capability is largely gone, and even the power to punish U.S. capitalists who evade the restrictions is limited in the current business climate in the United States.

The NATO countries and Japan have forced major reductions in the prohibited COCOM list, and go-betweens operate more or less freely in the sale of still prohibited items. The Soviet Union has to pay a marked-up cost in such cases, but it has no compunctions in avoiding regulations and laws unilaterally imposed by the United States for the sole purpose of harming the USSR, in flagrant violation of the Helsinki accords which prohibit discriminatory economic measures against signatories.

3. It fails to take into account the growing technological capability of the CMEA group of countries. Such technology is mutually available, without the restrictions of corporate secrecy which in many cases limit interchange of know-how within and among capitalist countries.

4. A final factor which decisively undermines and defeats the U.S. economic warfare policy is its inability to keep out the rain with a single wall. The United States is still the most powerful single unit in the capitalist world. But, in economic terms, less and less so. It no longer controls a monopoly of the supply of a significant range of items. The rest of the industrially advanced capitalist world does not participate in the U.S. economic warfare, or at most does so in diminishing, residual ways. Thus, the principal effect of the continuing U.S. economic warfare is to strengthen other capitalist countries at the expense of the United States.

Of course, some harm is inflicted on the Soviet Union. Thus, the denial of advanced technology to the Soviet Union hampers the speediest development of Soviet economic strength. Growth would be even faster in production and living standards if U.S.-USSR relations were unrestricted. Soviet scientists and researchers are forced to spend time duplicating some items that it would be more advantageous to buy from the United States. But overall, the effectiveness of this kind of economic warfare was always much less than its sponsors expected and is dwindling rapidly.

On the other hand, the damage it does to the U.S.

economy becomes increasingly apparent. I believe the negative effects on the United States are now much greater than on the Soviet Union. Thus, every contract with the USSR lost because of U.S. governmental restrictions means a loss in employment within the United States and a loss of profits to the corresponding manufacturers and their suppliers. In almost every case now, the Soviet Union has only to switch to another supplier with a possible, but not certain, small loss in quality.

These days most major projects, running into the hundreds of millions or billions of dollars, are negotiated by the USSR with competing corporate groups from various countries. Availabilities are more or less similar. Usually the advantage in financing terms, and in ability to buy back in compensation deals, gives the edge to West European or Japanese bidders. And this advantage is directly due to the anti-Soviet economic laws and regulations of the United States.

Anti-Communist trade discrimination hurts the majority of the American people in a variety of ways. Open trade, without discrimination, with the USSR, Cuba, Vietnam, and other socialist countries would undoubtedly lead to increased employment, and improved supplies of a wide variety of goods that are either not available, or not available at reasonable prices, to consumers and business in the United States.

The disastrous U.S. foreign trade deficit, which far surpasses in magnitude that sustained by any country previously, is very much aggravated by the lack of trade with socialist countries. The USSR, and some other socialist countries, favor the purchase of many types of U.S. products. Traditionally they have balanced surpluses in purchases from the United States with surpluses of sales to other countries.

The deficit in the balance of payments, and the consequent sharp decline in the international value of the dollar, is one of the main reasons why U.S. inflation has again gone up into the double digit range. With the incomes of most working people not able to keep up, inflation is reducing living standards.

The $10-$20 billion per year rise in U.S. military spending is also one of the major causes of accelerating inflation. But worst of all, it brings to the fore the shattering menace of a war, with the irremediable damage that would do.

AMERICAN BUSINESS, LABOR, AND PUBLIC WANT TRADE WITH THE USSR

That *most* large industries would enjoy improved business if restrictions on East-West trade were ended is evident from the broad variety of goods which are or can be marketed in the socialist countries. Producers of the whole range of machinery, equipment, instruments and, directly and indirectly, steel and other materials that go into these products, would benefit. As can be seen from the experiences of the last few years, farmers can benefit from regular sales of grain, especially feed grains, to socialist countries. And with rising living standards, socialist countries are increasing their imports of consumers goods. In trade with Cuba, Vietnam and other developing socialist countries, there can be important opportunities for manufacturers of a variety of consumers goods industries, including drugs and medicines, food products, cars and household equipment, as well as capital goods.

And the ability of socialist countries to supply essential materials, high-quality equipment at competitive prices, consumers specialty products, and an ample variety of other goods, has been well established through their broad trading relations with capitalist countries. U.S. business concerns can derive a unique advantage from East-West trade: socialist countries want to establish stable relationships under long-term contracts, including those arising out of huge turnkey investment projects on a scale not previously known in international trade. U.S. banks also have an important stake in financing this business, considering the 100 percent financial reliability of the USSR and other socialist countries.

The potential is widely recognized. Consider the petroleum equipment industry. Between 1972 and 1976 the USSR ordered $3.1 billion of petroleum equipment from capitalist firms, of which $550 million was from U.S. companies. In the following year and a half, they placed another near $550 million in orders from U.S. firms. (*Journal of Commerce*, July 24, 1978.)

Certainly, if U.S. trade policies had been less discriminatory, the U.S. share in this business would have been much larger. American capitalists hoped for improvement; they knew of the open-ended market in Siberia and other oil and gas development areas. In October

1977, 100 U.S. companies scrambled for business at the Moscow oil and gas exhibition. One company official said, "This market is kind of lost in the stratosphere", while another said the USSR "is the best market in the world for us right now". (*Business Week*, October 17, 1977, p. 52.)

A New York market research firm, Frost and Sullivan, found that the USSR has become the world's largest importer of machine tools, at a rate of $1,4 billion per year, having increased nearly six times in five years. Capitalist firms were getting 59 percent of the business. These figures indicate that if trade barriers were eliminated, the Soviet Union alone would provide U.S. machine tool firms with a market several times the present total U.S. export market for machine tools. (*American Metal Market/ Metalworking News*, June 5, 1978.)

Similar opportunities abound in data processing equipment, electronics, instruments, equipment for a wide variety of industries, and, as recent years have demonstrated, a large steady market for agricultural products. The Soviet Union is also a substantial purchaser of chemicals.

Of course, it is an elementary fact that one has to buy if one wishes to sell in international trade. And that's why the ending of gross discrimination against imports from the Soviet Union is essential. And one has to meet international competition in credit terms, requiring the ending of the barrier against Export-Import Bank credit.

President Carter, following the advice of his far-right advisers – Zbigniew Brzezinski, Senator Henry Jackson, belligerent generals and admirals – has engaged in an escalating propaganda war against the Soviet Union on "human rights" grounds. The establishment of diplomatic relations between the United States and the Soviet Union was accompanied, at the initiative of U.S. President Franklin D. Roosevelt, by mutual guarantees not to interfere in one another's internal affairs. This was reiterated in the agreements of the detente period.

But President Carter has proclaimed his right and that of his appointed aides to dictate to other (selected) countries how to run their affairs – e.g. issuing instructions to various West European countries to keep Communists out of their governments. Similarly, Congress has enacted resolutions requiring economic restrictions against a strange

variety of governments, on "human rights" grounds. Applied arrogantly and seemingly capriciously in various directions, these "moral" prohibitions are used most consistently and drastically against the Soviet Union, and some other socialist countries, and with the most dangerous effects.

But such penalties are not imposed on Apartheid South Africa, nor on fascist Chile, and in October 1978 President Carter told a newsman that he would not take measures against the mass killings and anti-popular terror conducted by the Iranian Shah because he, Carter, would not interfere in the domestic affairs of another country!

This is not the place to debate the human rights issues. I would suggest that everyone read the United Nations Covenants on Human Rights. Part of international law, these documents have been ratified by the Supreme Soviet of the USSR and the competent authorities of most countries in the world; but they languish without action before the U.S. Senate, and are not even circulated in the United States. Consider this world-accepted standard as an objective basis for judgment, and compare the degree of adherence by the United States and the Soviet Union. By any objective evaluation, the USSR comes much closer to the UN standards then the United States does.

U.S. criticism of the Soviet Union focuses on its emigration policies. But how would Americans react if other countries cut off economic ties with the United States and threatened us with an arms buildup on the grounds that our government has a savage policy toward the millions of Mexicans and other Latin Americans who immigrate to the United States without official documents?

Along with war propaganda, President Carter has taken steps to further curtail trade, cultural, and scientific ties with the Soviet Union. He recently prohibited the export of a computer, previously approved for export, to the Soviet TASS agency for use in covering the 1980 Olympics. The arbitrariness of this action, the breach of contract involved, tends to discourage all business with the USSR. Then the President restored stringent controls over the export of petroleum equipment to the Soviet Union, threatening the currently largest single industrial market in that country.

Affected business interests reacted publicly and sharply in a way not previously evident. James V. Jones, President

of Dresser Industries, whose $144 million contract for a plant to build drilling bits is threatened, charged that the new limitations "will virtually hand American export business to foreign competitors on a silver platter." (*The New York Times*, July 21, 1978.)

J. P. Lyet, Chairman of the Sperry Rand Corporation, whose computer sale was blocked, publicly accused the President of misstating the facts, and showed that the computer in question was similar to one already sold to the Soviet Union. The Secretary of Commerce, Juanita M. Kreps, publicly and strongly took issue with the President's actions against trade, while Secretary of State Cyrus Vance let it be known he also disapproved.

It was National Security Advisor Brzezinski who took the lead in pressing for these new blows against U.S.-USSR trade. Columnist Jack Robertson of *Electronic News*, journal of the electronics industry, vehemently attacked the ban on sale of the computer to TASS.

Under the headline "Et Tu, Brzezinski", he accused Brzezinski and Carter of "as many sudden contract assassinations as the Roman emperors". He said the Soviets, finding it "risky" to sign contracts with U.S. firms, would turn to dealing with "eager West German, British and French firms, which also have access to billions of dollars of credit from their governments", and he denounced the "export control Dr. Strangeloves" who have reduced trade to a trickle. He also accused Carter of acting illegally. Sperry Rand, he claimed, was denied "due process of law" which requires proper consideration of an export license; and he said Carter had not based his cancellation on legal authority–national security–but as a political reprisal, for which he has no authority. (*Electronic News*, July 24, 1978, p. 20.)

Within months the most influential big business circles joined the chorus of criticism. The chairmen of 60 of the very largest corporations, including General Motors, Chase Manhattan Bank, and Exxon, sent the government a petition protesting the "increasingly burdensome" political restrictions on exports, especially to the Soviet Union. It called on the government to publish full details of all such actions, including the number of jobs lost from each sale prohibited by the government. (*Wall Street Journal*, October 1, 1978.)

These exceptionally strong protests by capitalists, by Carter appointees, and by the business press reflect not only the big stakes involved in trade with socialist countries, but also the support of American public opinion for normal relations.

More and more trade unions of American workers are establishing relations with Soviet unions and calling for trade with the USSR. Trade union pressure for East-West trade prominently influenced other capitalist governments to develop economic ties with the USSR and other socialist countries. Hitherto, the CIA-affiliated top leadership of the AFL-CIO, buttressed by U.S. Government regulations barring Soviet trade unionists from visiting the United States (human rights again!) has kept the majority of American workers ignorant about the situation of Soviet workers and the power of their unions. With gross slanders against the USSR, such labor officials as George Meany have been able to keep most unions passive on the subject of trade with socialist countries.

But this is changing. Some unions have persistently worked for East-West trade and peaceful relations with socialist countries. Now this is spreading to more and more unions. The State Department has been forced to end its almost complete bar against contacts between American and Soviet workers. American workers, more than any other social sector, have a direct material interest in trade with socialist countries, and growing consciousness of this may be translated into action in the not too distant future.

Among the general public attitudes have changed substantially from four years ago, when the main Congressional blows to trade with the Soviet Union were struck.

A public opinion poll by the Louis Harris organization found that by a margin of 70.1 percent to 17.6 percent Americans favored an increase of mutual trade between the United States and the Soviet Union, and by a margin of 63.5 percent to 20.6 percent, favored granting the USSR the same trading rights as most other nations have. (The percentages do not add up to 100 because of those who were "not sure".)

Such overwhelming majorities, on any issue, are extremely rare in American politics. Moreover, similar majorities were recorded among people of all political philosophies, occupations, races, religions and income levels. (Louis

Harris and Associates, *Release*, May 22, 1978).

This poll, conducted in the midst of a furious anti-Soviet propaganda campaign by official Washington and the media also gave a resounding mandate for detente in general, for disarmament, and other key issues in U.S.-USSR relations.

Often U.S. political figures imply that their anti-Soviet actions or anti-Soviet propaganda are in response to extremely strong political pressures. The implication is that they have to respond in order to remain in office. Well, it is clear from this poll, as well as from other indicators that the pressures are not from the voters. One must conclude that the politicians in question are beholden to the narrowly based, but powerful and extremely wealthy, militantly aggressive anti-Communist circles.

A country preparing for war against another will not encourage trade with its expected target. The United States is now at a crossroads in this respect. To consolidate the principle of peaceful coexistence embodied in the 1972 agreements requires relaxation of military tension. But that direction is under most severe attack in Washington. The SALT II Treaty, signed after such prolonged and difficult negotiations, is for the essential step forward towards peace. As this book is prepared for the printer, SALT II awaits a hairline decision in the U.S. Senate. The Carter Administration, promoting ratification, is taking a number of steps which violate its essence—the MX Missile, NATO missiles to hit Soviet targets, unprecedented-for-peacetime jumps in the military budget.

It is critical time. Despite the armpulling of the military-industrial complex and the pro-war tycoons, a majority of the Senate is certain to vote for SALT II, if not the legally required two-thirds. But if put to a popular vote, the polls show, much more than two-thirds would say yes.

Such an expression of the democratic will of the U.S. people gives grounds for hoping that common sense will prevail, and that the potential for positive U.S.-Soviet economic, cultural and scientific cooperation will be realized, along with progress toward disarmament and full peaceful coexistence.

Chapter XIV

THE TWO SYSTEMS—AND AN AFTERWORD

In the early months of Soviet power there was the debate within the leadership between those who envisioned a war to spread the "world revolution" and those who believed that revolution could not be exported. Lenin, of course, favored the latter approach, which prevailed. He believed that each country had to solve its own problems, and its people had to make their own socialist revolution. That in no way meant indifference to the world revolutionary movement, but he considered that the first socialist country could best strengthen the influence of revolutionaries in other countries by its economic and social accomplishments. He considered it essential for the USSR to create a strong, modern economy.

When the Civil War and War of Intervention ended victoriously late in 1920, Lenin repeatedly emphasized that the main struggle against capitalism had shifted to the economic sphere.

He defined the conditions of victory as achieving a higher labor productivity, and hence, of course, a higher total production, than capitalism:

"In the last analysis, productivity of labor is the most important, the principal thing for the victory of the new social system. Capitalism created a productivity of labor unknown under serfdom. Capitalism can be utterly vanquished, and will be utterly vanquished by socialism creating a new and much higher productivity of labor. This is a very difficult matter and must take a long time: but *it has been started*, and that is the main thing... Communism is the higher productivity of labor—compared with that existing under capitalism—of voluntary, class-conscious and

united workers employing advanced techniques." (*Collected Works*, Vol. 29, p. 427.)

Before World War II, and for ten years afterwards, capitalists didn't take this challenge seriously. They did continue to conduct economic warfare against the Soviet Union, but with the idea of weakening, and ultimately destroying, the socialist system. But the outlook changed.

During the 1950s, having recovered from wartime destruction, the Soviet economy advanced with seven-league boots while the U.S. economy became relatively stagnant. The extremely ambitious goals that were set at the end of World War II for 1960 were surpassed for coal and steel, and more than doubled for oil. The challenge was dramatized and 1970 was set as a target date for catching up to the United States in per capita production. This was based on a projected Soviet annual growth rate of 8.6 percent in industrial production, a U.S. growth rate of only 2 percent and an estimate that in 1958 Soviet industrial production was 55 percent of the U.S. level.

This goal proved far too optimistic. The U.S. economy grew more rapidly in the 1960s than in the 1950s; the Soviet statistical method exaggerated the ratio of its industrial production to the U.S. level; and the USSR was further behind in some non-industrial areas than in industry.

The Soviet economy has continued to gain on the U.S. economy, as we show in table I. But it still remains behind in overall strength.

According to Soviet estimates, its national income increased from 31 percent of the U.S. level in 1950 to 59 percent in 1965 and 67 percent in 1975. (*Narodnoye Khozaistvo SSSR, 1975*, p. 123.)

The CIA estimates that in 1975 the Soviet gross national product was 57 percent of the U.S. level. (The U.S. gross national product, as differentiated from national income, includes large sums for such items as advertising and finance, which have little counterpart in the Soviet economy.) At any rate, the U.S. and the USSR figures give some indication of the range between the relative size of the two economies – from 57 percent to 67 percent. In my opinion, the Soviet statistics are more realistic.

Using the Soviet figures, that would mean that, considering the larger population of the USSR, *per capita* national income in the USSR was 56 percent of the U.S.

per capita level, about equal to that of Western European countries, in 1975. Since 1975 was a crisis year in the United States, and the U.S. economy has since recovered at a rate close to the growth rate of the Soviet economy, the 1975 relationship approximately prevailed through 1978.

Judging from the rate at which the gap in national incomes was narrowed between 1965 and 1975, it will be another several decades – that is, into the next century – before the Soviet Union surpasses the United States in total economic strength.

I asked leading Soviet economists whether they still considered it a prime strategic task of the USSR, in the field of economics, to surpass the United States in per capita production. Yes, they said, but it isn't actively in the center of their attention; they are focussing on improving their own country's economic performance without measuring everything in relation to the United States.

Some American economists and statisticians, including CIA researchers, attempt to prove that the whole record of the Soviet Union shows very little superiority over the United States in economic growth rate. They accomplish this by manipulating statistics in order to obtain estimates of a Soviet gross national product corresponding to the official U.S. concept of gross national product.

There is no need here to polemicize on these calculations. The basis of modern economic strength is provided by industry, and industrial output is measurable within reasonable bounds of error.

Soviet statisticians estimate that their industrial production was 12.5 percent of the U.S. level in 1913, less than 30 percent in 1950, and more than 80 percent in 1975. Let's consider the last 25-year interval in this calculation – 1950-1975.

The U.S. industrial production index increased about two and a half times during this period – 2.62 times, to be exact – which amounts to a compound annual rate of 3.93 percent. The Soviet industrial production index increased nearly ten times – 9.85 times, to be exact – which amounts to an annual rate of 9.58 percent. The CIA's recalculated index of Soviet industrial production showed an increase of 6.77 times, for a compound annual rate of 7.95 percent. Even these biased figures admit a tremendous advantage to the Soviet Union in rate of growth, one which is completely

consistent with the Soviet estimate of the degree to which the USSR has caught up to the United States since 1950.

Moreover, the Soviet industrial growth rate was faster than that of the United States during every five-year period within the 25 years, whether judging by the Soviet or the CIA indexes of Soviet industrial output. And the margin of Soviet gain has been nearly fully sustained, the slowing down in Soviet industrial growth during the 1970s being approximated by a similar slowdown in U.S. industrial growth. (*Narodnoye Khozaistvo SSSR, 1975*, p. 190; *Soviet Economy in a New Perspective*, pp. 273-274; *Economic Report of the President*, 1978, p. 302.)

The gain of Soviet industry in competition with U.S. industry is shown more sharply by comparing U.S. and Soviet production of key industrial products, which are readily measurable and about which there can be no significant dispute. These figures are shown in Table 1.

Table 1

PERCENTAGE OF USSR TO U.S. INDUSTRIAL PRODUCTION, SELECTED ITEMS AND YEARS, 1913-1977

Item	1913*	1922	1928	1937	1945	1950	1965	1977
Electricity	8	1	4	24	15	22	41	51
Oil	27	6	9	16	8	14	63	136
Natural Gas	—	0.1	0.7	3	3	3	28	59
Steel	15	1	8	33	16	30	75	124
Cement	13	0.7	6	27	11	26	111	165
Chemical Fertilizer	3	0.1	na	64**	na	31	69	123
Chemical Fibres and Yarn	—	—	0.4	6	0.3	4	27	29
Cotton Textiles	41	na	30	33	15	32	66	144

Sources: *Narodnoye Khozaistvo SSSR, 1922-1972*, pp. 80-83, 1975, pp. 140-143, *SSSR v Tsifrakh, 1976*, p. 64-65 "Annual Reports of Soviet industrial production", *Pravda*, 2/1/76; 1/23/77; 1/28/78. *U.S. Federal Reserve Board, Industrial Production*: 1976 Revision Table A-19. "Industrial Production Indexes", 1976; *Statistical Release*, April 14, 1978.

* Czarist Russia.
** 1938.

In 1913 Czarist Russia produced only 15 percent as much steel as the United States. In 1922, after the wartime destruction and dislocation in Russia, and wartime boom in the United States, Soviet steel production started out at only 1 percent of the U.S. level. By 1928, the prewar Russian level of steel production had been regained, but, since U.S. production had increased, Soviet production was still only 8 percent of the U.S. level.

But then the real expansion of Soviet industry started, with the five-year plans. After two such plans, by 1937 Soviet steel production was 33 percent of the U.S. level. But in World War II the United States built up its steel capacity, while much of the USSR's capacity was destroyed by the nazis. So, despite Soviet success in building new capacity in the Urals, by 1945 Soviet steel production was only 16 percent of the U.S. level, about the same relative position as that of Czarist Russia to the United States in 1913. By 1950 it was back up to 30 percent of the U.S. level, nearly where it had been in 1937. By 1965 it was 75 percent of the U.S. level and in 1977 Soviet steel output exceeded that of the United States, reaching 124 percent of the U.S. level.

Trends were roughly similar for each of the eight items shown in Table 1, but with significant differences. By 1977 the USSR was producing 36 percent more oil, but 41 percent less gas, than the United States, although it was rapidly catching up to the United States in natural gas output. Similarly, the Soviet Union was 44 percent ahead of the United States in production of cotton textiles, but still far behind in production of chemical fibers (synthetics).

Cement output was far ahead of the U.S. level, reflecting the tremendous scope of Soviet construction activity. And fertilizer output finally surpassed the U.S. level by 23 percent, a result of the huge Soviet investment designed to overcome the natural handicaps faced by its agriculture through intensified application of chemicals, increased use of machinery and by land improvement and irrigation.

However, Soviet electricity output had reached only a little more than half the U.S. level by 1977. Part of that difference reflected the relatively extravagant use of electricity in the United States by the upper income groups in their personal living, and for commerce and advertising. Soviet statisticians estimated that application of electricity to industry had reached 80 percent of the U.S. level. But even so, the difference represented less completely automated and mechanized production processes in the Soviet Union than in the United States.

The Soviet Union still lags far behing the United States in the production of some kinds of consumers goods, the most obvious case being passenger automobiles. Soviet car output in 1977 was only 14 percent of the U.S. level,

and considerably below that of a number of other capitalist countries. In part, that is compensated by a superior mass transit system in most large Soviet cities.

The quality of Soviet goods, on the average, is below that of U.S. goods. In the present period, Soviet industrial planners and managers are concentrating on closing that quality gap.

I want to dwell on the significance of two of the items listed in the above table – oil and steel.

The world leadership of the USSR in the production of oil, iron ore and steel counts for much more than the relative weights of these items in an industrial production index. These items, along with certain other raw and primary manufactured materials, are the very foundation of economic power.

The USSR and other socialist countries will still strive to, and ultimately will, surpass the most advanced capitalist countries in overall production per capita. But they will achieve parity and then superiority in overall economic strength before that statistical point is reached, because of the advantages of a planned socialist economy.

Let me repeat a bit from Chapter I, in the list of special strengths of the Soviet economy:

"The prevision of the first leaders of the Soviet state and their non-imperialist approach, which led to the early building of a great geological and resource development sector, and which has made the USSR the only major industrialized power with an energy surplus."

Mind you, it isn't that the leaders of capitalism have been unaware of the importance of basic materials. Far from it! But they concentrated on getting control of *other people's raw materials*, and at a fraction of the cost of producing the same or equivalent materials in their own countries. This was very profitable for the owners of corporations, and for a long period it assured the United States, Britain and other industrialized countries of having relatively cheap, luxuriously ample supplies of raw materials.

But at what cost! For example, World War I and, in part, World War II were fought among capitalist countries over distribution of and access to the materials of the developing countries.

And the cost to the countries of Africa, Asia and Latin

America as the victims of colonialism and, later, of neo-colonialism; of poverty and economic backwardness as their resources were taken – plundered – and thus not available to them to provide a basis for their own development.

Now that kind of relationship is becoming insupportable. The peoples of the victim countries are in revolt – at different paces, but with a decided momentum and increasing victories. For more and more basic materials, corporate access to unlimited supplies at cheap prices is being reduced or eliminated.

That's why the energy crisis in the Western countries is coming to a head at this time.

And there's another side to it. The Soviet Union had the difficult task of ensuring its industrial base through the efforts of its own people. It was necessary to give the most vital users priority of access to basic resources. Therefore the construction of a fundamental industrial and modern agricultural base, and an adequate defense industry, necessitated economizing on materials for other uses and limited the production and diversification of goods for luxury and semi-luxury uses.

Thus we have this difference:

The Soviet Union produces much more oil than the United States, but it consumes considerably less. The United States imports nearly as much as it produces; the Soviet Union is a net exporter – primarily to other socialist countries, but also to capitalist countries in exchange for industrial equipment and technology to accelerate its overall development. The United States, on the premise of seemingly unlimited supplies of cheap oil, built an overwhelmingly private automotive transport economy, and a whole structure of housing locale, industry and commerce based on it. The Soviet Union limited private automobiles, concentrated on developing effective, modern mass transit and railroad systems, which are much more energy efficient.

For some decades, U.S. policy made possible a higher level of mass comfort for large sections of its population. But now that "way-of-life" is being maintained only at constantly rising cost and stress, and will probably have to be amended. Under capitalism, this forced change is taking place anarchically, in conditions of sharpening conflict and at the expense of the living standards of working people.

Moreover, the automobile economy has reached such a

degree of giganticism that the highways and parking places are jammed and it has become a source of declining comfort and increasing inconvenience and danger from accidents and of harm to the environment.

At the same time, the USSR is now at a stage where it can steadily increase the availability of automobiles to individuals, at a pace that is consistent with available servicing, traffic facilities, road construction, etc.

The difference between the USSR and the USA in energy policy has its counterpart in their different political relations with the developing countries. The Soviet Union in accordance with the United Nations Charter and the principles of national independence that are formally upheld almost universally, gives wholehearted support, diplomatic and material – including, where necessary, the supply of armaments – to people fighting for independence, for release from apartheid, for freedom from repressive, dictatorial, puppet regimes of imperialism.

The United States, in a policy dictated to a considerable extent by the interests of corporate owners of foreign raw materials, is almost always on the other side of that conflict – supporting reactionary Shahs, Somozas and Pinochets, collaborating in effect, although not without squirming, with the apartheid regime of Southern Africa.

Most seriously, there is the danger of a major war arising out of this conflict. And the United States position cannot win; it can only delay, at great cost, the course of history. Nor is it supported by the majority of people in the United States.

Such problems as energy, raw materials and the environment have become very real and global in scale. Because they require centralized planning, the Soviet Union and the socialist community have a big advantage in solving them. But they are handicapped by the division of the world and conflicts with the United States and other capitalist countries over these issues.

By and large, the United States has evaded cooperation with the Soviet Union on problems of energy and raw materials, and has striven to work out unilateral cooperation among the major capitalist powers, in confrontation with developing countries and, to some extent, with socialist countries. The failure of these attempts is evident.

Cooperation with the socialist and developing countries

to solve the fundamental economic problems, which have become global, is in the deepest interest of the people of the United States, as well as of all other countries.

To some extent the remaining economic margin between the United States and the Soviet Union may be illusory. Through its socialist planned economy, the Soviet Union achieves an economic efficiency in the use of its productive facilities exceeding that of the United States or other capitalist countries. This was dramatically illustrated during World War II, when the Soviet Union was able to mobilize its much weaker economy to outproduce the combined output of Germany and all of occupied Europe in what counted most – the needs of the armed forces – while providing basic living essentials for the hard working civilian population.

While not so marked in peacetime, this advantage is none the less real. In 1956 conservative Yale professor, William Fellner, wrote:

"It would take the Soviet bloc roughly half a century to catch up with the West, in terms of yearly aggregate output. But it might take them very much less time to catch up in terms of those constituents of aggregate output which determine relative power positions." (William Fellner, *Trends and Cycles in Economic Activity*, Henry Holt and Company, New York, 1956, p. 74.)

Fellner warned that if those trends continued, "the survival of Western institutions" would be in doubt.

Indeed, there is now general agreement among Western leaders and commentators that a rough parity in overall power position has been reached by the United States and the Soviet Union.

We have focussed on economic competition between the United States and the Soviet Union. And that is the most important single element. Yet that is but part of the overall economic competition between the group of socialist countries, united in the CMEA, and the industrialized capitalist countries, grouped in various military and economic organizations consisting of the United States and Canada, Western Europe, Japan, Israel, Australia and South Africa.

The gains of all the socialist countries together over all the capitalist countries have been comparable in tempo to those of tbe Soviet Union in relation to the United States. Moreover, the level of per capita output of the CMEA countries today is close to that of the industrialized

capitalist countries. On the other hand, the economies of the CMEA group are much better integrated and less subject to inner conflicts and rivalries.

The defection of China from the socialist camp, its economic dependence on and almost exclusive dealing with the capitalist countries, seriously set back the Soviet Union, especially, and the socialist countries as a group, in their economic competition with the capitalist countries.

If China had not embarked on this course, and all that went with it in terms of anti-Soviet military preparations and provocations, destructive economic and social policies, China today would be a country of medium industrial development. And tbe total industrial production of the socialist camp would be equal to that of the industrialized capitalist countries as a group.

But the defection of China bas not prevented continued overall gains by the other socialist countries. Their share in world production today is far greater than was their share, togcther with that of China, 20 years ago.

Two decades ago, the pioneer Soviet Sputnik shocked Western politicans and capitalists into the realization that they faced a formidable rival in all spheres of human activity; a rival that could test tbe capitalist social system, a rival anxious to keep that test to peaceful areas of competition.

A *New York Times* editorial columnist, C. L. Sulzberger, wrote of "the century's outstanding fact: that the United States and the Soviet Union have become tbe two paramount powers of the world and must deal as equals". (January 23, 1960.)

Former British Prime Minister Macmillan told a Soviet audience:

"The future before the Soviet people is one of expanding horizons. The rate and quality of your progress are indeed extraordinary and, so far as I know, unparalleled in history." (*The New York Times*, January 24, 1959.)

At that time, reasonable U.S. executives and officials welcomed the prospect of peaceful competition with the Soviet Union, as a stimulus to progress in the United States.

Lawrence G. Derthick, U.S. Commissioner of Education, reported on his trip to the USSR: "What we have seen has amazed us... We were simply not prepared for the degree to

which tbe USSR, as a nation, is committed to education as a means of national advancement.

"Everywhere in Russia there were evidences not only of passionate love of country but a burning desire to surpass the United States in education, in production, in standard of living, in world trade–and in athletics... We did not find among children and teacbers any evidence that this fierce sense of competition was otber than of peaceful intent." (*The New York Times*, May 25, 1958.)

J. T. Connor, President of Merck and Co., a leading drug manufacturer noted that in 30 years the Soviet Union had pulled up from 25 years behind the United States in life expectancy to 2 years behind. Commenting on the "enormous vigor and growing strength" of the Soviet economy, that the challenge of surpassing the U.S. economically be taken seriously, he proposed:

"Let us, then, challenge the Soviet Union to a new kind of competition–a longevity race... to see whicb of us can first attain for our citizens an average life expectancy of three quarters of a century". (*York Gazette & Daily*, June, 25, 1958.)

However, these proposals by prominent Americans for accepting the challenge of peaceful competition were not followed by the U.S. Government which, instead, soon launched a new spiral in the arms race, threatened nuclear war against the USSR over Cuba, and carried out the long genocidal war of conquest in Vietnam.

COOPERATION OR COMPETITION?

U.S. Government attitudes toward the Soviet Union have undergone fairly sudden cbanges in tbe past. There were periods of relative friendship during World War II–from 1941-45; following the first Sputnik–from 1958-60; and in the 1972-74 period.

The last period featured the most far-reaching development of cooperative relations between the two countries. It's interesting to note that this was during the presidency of Richard M. Nixon, who first came to prominence as a specialist in anti-Communist politics. The logic of events, tbe pressures of world and domestic politics, the new crises afflicting the U.S. economy–all induced Nixon to go the road of detente.

Certainly, as indicated by the Harris poll cited in the previous chapter, a renewal and furtherance of that process is supported by a substantial majority of the American people. The economic difficulties afflicting the United States are deeper than at the start of the decade. And the world trend toward detente is more powerful than ever.

The Soviet attitude toward the United States has always been a blend of competition and cooperation, in varying proportions depending on the political climate. From our conversations in the USSR in 1977, and from Soviet writings, it seems to us that in the present period, Soviet emphasis is on cooperation rather than on competition in the economic field.

Soviet statistical abstracts still compare U.S. and Soviet production of various products, as well as comparative composite economic indexes to show Soviet gains in competition. But publicity in favor of economic cooperation is widespread and given much more emphasis. The Soviets deny the claim of hostile U.S. commentators that tbey "desperately need" U.S. advanced technology to "rescue" their "ailing industry". They argue, and not without reason, that if a virtually complete capitalist embargo in the decade after World War II did not prevent the very rapid advance of USSR economy and technology, how could limited, unilateral U.S. economic warfare do serious damage to the several-times-stronger Soviet economy today.

Yes, they say, the ending of economic discrimination and increased cooperation will save the USSR time in some areas of development, and permit a more rapid increase in living standards. But they also claim that this cooperation will be of equal advantage to the United States.

The main Soviet emphasis is the connection between economic cooperation and political and military detente, especially the primary goal of disarmament and peace. They are convinced tbat increasing economic, scientific, cultural and just plain people-to-people contacts will undermine the forces making for the arms race and for war.

The passionate devotion of the Soviet people to peace is understood by all who remember or have learned of the 20 million killed and the trillion dollar destruction wreaked on the USSR by the nazi invaders in World War II. The Soviet's basically defensive military deployment is noted in standard professional military tracts, giving the lie to

the revived propaganda of a "Soviet threat" to Western Europe – which, incidentally, is spread by some of the saine U.S. generals who themselves also write detailed reports of the defensive Soviet military stance.

Soviet war memorials are the most extensive, and most moving, in the world. Most do not emphasize battlefront victories, although the heroism of Soviet servicemen and civilians is a theme; their main motif is grief over the losses.

In Yerevan we saw the hilltop monument to the one and a half million Armenians slaughtered in the genocidal pogrom of the Turkish Empire in 1915, as well as many less dramatic memorials. That event is, to the Armenian people, as tragic as the Hitlerite slaugbter of the Jews to the Jewish people.

And in Latvia we went to see the overpowering, stunning memorial at Salaspils, the site of a nazi concentration camp wbere 100,000 people were killed.

While walking through thc Adazi collective farm with its chairman, A. Kaule, we mentioned having visited Salaspils the previous day. Kaule said that all tbe members of his family had been murdered there, except bis father, who was killed as a partisan fighting the nazis.

The next evening at the farewell dinner, I mentioned this incident to our sponsors. Whereupon each of our Latvian hosts, as well as Elena and Valery, told us of their family losses in World War II. The saying that almost every Soviet family suffered the loss of loved ones in the war is literally true. And, in addition, some Soviet people over 30 years old still bave some health problems as a result of the material deprivations felt by everyone in the USSR during the war years and the following period. There has never been anything like that in tbe experience of the American people.

Soviet devotion to peace, then, is fully understandable in human terms, as well as in socialist political theory.

We have no doubt that a far-reaching disarmament agreement will be followed by a marked acceleration in Soviet economic progress, especially in living standards. But that is true not only of the Soviet Union. There is growing recognition in the United States that, here also, despite the contradictions of capitalism, disarmament will create favorable conditions for people to win important social

and economic gains, and will facilitate alleviation of some of the most severe contradictions and crises afflicting the economy.

Most Americans may not realize it, but the Soviet and U.S. economies have had pronounced influence on each other. In the case of the Soviet Union, this has been conscious: to learn from the advanced U.S. economy how to organize and operate enterprises in a businesslike way, as well as to obtain, through exchange and purchase, equipment, process licenses, and a variety of commodities.

In the case of the United States, the influence has been more indirect. Political struggles have forced the legislation of such social accomplishments of Soviet society as a 40-hour work week, social security and trade union rights, while other Soviet achievements, such as economic and social equality among races and nationalities, socialized medicine, economic planning, and even nationalization of basic industries and finance, have become goals of substantial social and political groupings. Even some private corporations have adapted some of the techniques of 5-year planning to their own objectives. And recent scientific and technical exchanges have been beneficial to both sides.

There are those who conclude from the increasing interchange and mutual influence that the two societies are converging to an in-between system which, in their view, is actually much closer to the present capitalism than to socialism. That convergence theory has no foundation. Soviet society is gradually fulfilling its socialist ideals more fully and moving closer to its communist ideals. U.S. capitalism is showing increasing symptoms of decay, corruption, extremes of class differentiation, exploitation and racism, with no change in its fundamental ideology–private ownership of the means of production–or in the emphasis of the government in preserving and strengthening the system.

But having recognized that, we would stress that for every rational American–capitalist or worker, Black or white, man or woman, old or young–peace and cooperation with the Soviet Union are essential, regardless of any conflicts on other issues. If a deeper understanding of the Soviet economy helps in spreading that message, this book will have performed its most vital purpose.

AFTERWORD.....

A common cliche is "socialism won't work because you can't change human nature"–meaning that man is by nature greedy and competitive and that he will function effectively only in a dog-eat-dog society, everyone for himself.

But in this book we have seen that socialism does work, and better than capitalism.

Socialism starts to work because a working-class government, obtaining power with mass backing and participation, satisfies the most urgent immediate demands of the people and ends their ages-old exploitation by capitalists and landlords, their oppression by racists and chauvinists. As it does so, it eliminates the fundamental basis for the psychology of selfishness, the "human nature" considered characteristic of capitalism.

As socialism is built, as it provides richer opportunities through cooperative working and living, as it educates people in the spirit of Communism,–the psychology of people, their motivation, their egocentrism, changes gradually in one way after another, and eventually a new type of socialist personality emerges.

As we were completing this manuscript in October 1978, there was on television an installment of *The Unknown War*, a documentary film about the part played by the Soviet Union in World War II, based on Soviet and captured nazi war films. We were impressed not so much by the military heroics, which were not directly seen in the film, but by the great humanity expressed by the people, soldiers and civilians; by the simple and natural way in which they plunged into the defense of their country and their socialist social system with whatever sacrifices, including their lives, might be required.

True, people under capitalism also have risen to the occasion under extreme stress, such as meeting an invader or dealing with a natural catastrophe. Workers unite to fight for decent treatment on the job. But there was an unprecedented dimension in the four year period, sustained by the mass, nearly unanimous heroism of the entire population. This went beyond citizens fighting to save their country, although that was there too. It was also people fighting to save a superior social system, to liberate Europe from fascism. And that was an important part of

the reason why the Soviet Union survived losses that no capitalist country could have sustained and still triumphed.

We saw another aspect of that emerging new social consciousness when we visited Cuba in 1966; when we saw the comradeship the Cuban people felt for the tens of thousands of Soviet engineers, technicians, teachers and other specialists who had come to help them, their appreciation not only for their aid but especially for the kind of people they were.

Yet another aspect–and in the long run the most decisive–emerges in the great construction projects of advanced socialism. And this is what we felt in Surgut and Nizhnevartovsk, in the Organic Synthesis Institute in Riga, in the Children's Art Gallery in Yerevan, and in many other experiences during our visit to the USSR.

The process is still going on, and it has a long way to go. There are still Soviet people who drink excessively, and behave badly under the influence. There are still bureaucrats, and super-nationalists about their own republic within the USSR–although without disparagement of others. There are still theft, profiteering, black marketeering, even physical violence. But such instances of criminal activity are on the decline, and are much much less than in capitalist countries.

The trend in a positive direction is unmistakable, is gaining momentum, and is irreversible. In a general way, it is charting a course for all humanity. These human values of socialism are the ultimate objective, what the struggle is all about.

And the economic life about which we have written in this book is the absolutely essential fundamental basis without which these human values cannot be attained. The further growth of the economy, its further perfection, will step by step motivate the further advance of socialist human beings, the elimination of the ugly vestiges of the past society, of external capitalist influences. It will set the stage for people to achieve new heights of accomplishment, richer existence, fuller freedom in charting the paths of their lives and happiness.

About the Authors

Victor Perlo, a U.S. economist and writer, was born in New York in 1912. After graduating Columbia University he did economic and statistical research. Before World War II he was employed with the U.S. Department of Commerce, and during the war worked for government agencies concerned with the war effort. Since the war he has been engaged in economic research and writing.

Mr. Perlo's works deal with the postwar development of the U.S. economy. He has produced studies of the country's finance capital, the economic expansion of U.S. monopoly, the militarization of the U.S. economy, disarmament, labor problems, and so on. Many of Mr. Perlo's books have been translated into Russian.

Ellen Perlo is Mr. Perlo's wife and close assistant. In the Communist Party she is involved in issues pertaining to the role of culture in the Party and in the living and working conditions of creative people.

During their trip to the Soviet Union to gather material for this book Victor and Ellen Perlo took about 900 photographs. Some of them appear in the book.

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